approach

NavWeps 00-75-510 The Naval Aviation Safety Review

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Reducing fatigue
in carrier ops-pg 1

The occasions and factors which can produce fatigue are almost endless. And this is just about the only statement on which students of the fatigue problem are in complete agreement.

FATIGUE

Noisy, hot crowded quarters in transient BOQ's and barracks . . . time-consuming collateral duties in the squadron . . . night SAR missions followed by early morning flight quarters . . . duty officer's sleep interrupted by incoming messages and calls . . . long transport flights with a few hours' rest snatched on a cargo litter . . . hours in the ready room as pilots and crews, fully-suited, await the call to man aircraft or sit strapped in the cockpit, awaiting launch . . . more complicated and demanding equipment . . . the pressure of special exercises and operational commitments . . . All of these can cause or aggravate fatigue and fatigue contributes to accidents.

Different persons in the scientific field define fatigue and its effects in different ways. Some may see fatigue as a subjective experience and relate it to perceptual impairment, delayed decisions and work decrement or variability in work output.

Others think of fatigue in terms of nerve or muscle response. And still others measure fatigue in metabolic changes. In addition, recent studies have indicated that a positive attitude, good motivation and self confidence seem to delay symptoms of fatigue.

Generally speaking, however, fatigue is a topic for concern no matter what its origin or circumstances . . . no matter whether it is classified as subjective or physiological, chronic or cumulative. And it is a problem currently of great interest to naval aviation.

Fatiguing Environment

Modern high performance aircraft subject pilots and crews to a fatiguing environment. As ComNavAirPac's Instruction 3750.2A on fatigue in aircraft operations puts it, "Increased speed in the air, in-

creased demand on the pilots and dependence on more and more electronically complex equipment for safe flight effect an increasing lurking anxiety which can never be wholly dispelled in flying."

Ground crews, catapult crews, flight deck crews, PriFly and tower personnel are just as susceptible to fatigue as pilots and crewmen. And when it comes to setting up an accident situation, fatigue in support personnel can be equally as dangerous as fatigue in flight crews.

"This is particularly true in carrier operations," the NavAirPac Instruction states. "And to a slightly lesser extent (it is true) during operational exercises ashore where there is a tendency to maintain a high tempo of operations around the clock without adequate consideration for rest requirements of the personnel involved. Consideration should be given to the decrease in efficiency of aircraft handling and maintenance personnel as evidenced by the onset of fatigue. In certain cases adjustment of the entire shipboard routine including a commensurate reduction in the requirements for various working parties is mandatory to insure adequate uninterrupted rest periods for nonflying personnel."

What Do Pilots Think?

Mountains of material have been written on fatigue from both a medical and operational standpoint. But what do pilots themselves think about the subject at the present time? To find out in their local area, the medical committee of the station hospital at El Toro distributed a questionnaire to aviators at MCAS El Toro and MCAF Santa Ana. (See questionnaire, page . . .) Replies were anonymous.

"The majority of the answers received served to reinforce the impression that almost all aviators are familiar with the role of adequate sleep, relaxation, exercise and diet," the report accompanying the questionnaire results states. "For the most part, they seem to have an intelligent and responsible attitude about these factors."

A number of points came to light in the survey:

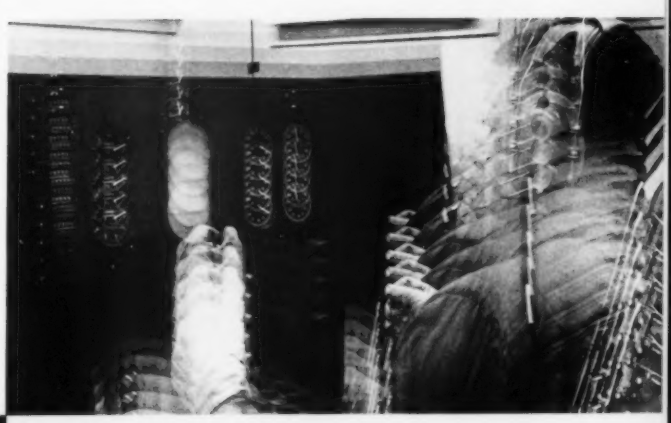
- Most of the aviators questioned think of fatigue in the purely physical sense only. Although they recognize that various mental stresses exist and are important to their general sense of well-being, they think of them more in terms of mental tension or nervousness which to them have little to do with fatigue and their own physical effectiveness.
- Many aviators replying to the questionnaire re-emphasized the perennial problem of too many "extra-flight" duties such as staff and squadron administrative duties which take away from their primary job of remaining proficient aviators.
- Most of the aviators questioned reported an average of only one to three hours of active exercise each week. (The Navy's physical fitness program was just getting underway at the time the survey was made.)
- Many aviators checked off "misuse of flight equipment," such as not using an anti-G suit when indicated, or indicated poor-fitting helmets and oxygen masks as important causes of fatigue.

Other comments received on the questionnaires dealt with the need for improved lounge, meal and billeting facilities for transient pilots, the need for more flight time to maintain optimum familiarization and proficiency which lessens tension and thus reduces fatigue, and the necessity for maintaining and improving motivation to fly. Other comments noted the use of squadron deployments to "set records" and "overfly" personnel, the location of squadrons next to burner test stands where noise is a great fatigue-producing factor, and unnecessary delays by control tower and air traffic control centers which contribute to pilot fatigue, especially in hot weather.

A well-balanced program of work, rest, physical exercise and recreation can reduce the proportions of fatigue both ashore and aboard ship. Meanwhile study of the nature and effects of fatigue on performance and research such as the vibration test pictured here continues.

Perhaps one of the most important factors in the prevention and reduction of fatigue and one which is normally under the individual's control is plenty of sleep.

In an unpublished NASC study of accidents in which pilot fatigue was reported by the investigating flight surgeon, a high relationship was found between the amount of sleep in the 24 hours preceding the accident and the time in flight at which the accident occurred. Pilots whose fatigue stemmed from lack of sleep the preceding night tended to have accidents shortly after arising. Those pilots with more adequate rest, whose fatigue arose from circumstances of the flight, were more apt to have their mishaps later in



the day, and usually with less fatal consequences than in the former case.

Prolonged lack of sleep in flyers adversely affects the higher mental processes such as memory and alertness. Further, altitude tolerance has been shown to be lowered by excessive and prolonged loss of sleep. . . . Many studies have shown that physical fatigue may be greatly alleviated by a brief nap but that mental fatigue is not significantly reduced without a relatively prolonged period of sound sleep.[1]

Here are two extreme examples of what lack of adequate sleep can do to a pilot.

On the night prior to the accident, the pilot had the duty. He went to bed at approximately 2220 but was awakened to sign for incoming dispatches nine times during the night. He got up at 0555 and had breakfast at 0630. As the flight surgeon reporting on the fatal collision with the water stated, these 7½ hours of "grossly interrupted sleep" comprise an insufficient amount of rest for anyone who intends to pilot aircraft.

The second case involved a fatal attempt to land an FJ after electrical failure at 6000 feet. On the previous night the pilot had attended the shipboard movie. He went to bed at 2300. At 0215 along with the rest of his squadron, he was alerted to perform

MCAS EL TORO

QUESTIONNAIRE

A service-wide study is being conducted on the relationship between fatigue and aviation mishaps.

The following questions are an attempt to more clearly delineate the importance of various factors which relate to fatigue.

We realize the questions lend themselves to humorous replies, but we hope you will answer them conscientiously and with the sincerity with which they are presented. Do not sign your name. After completing the questionnaire, please return it to your squadron flight surgeon.

1. How many hours per week do you devote to physical exercise, other than required squadron or group physical conditioning? What activities or sports?

2. Do you usually make a conscious effort to assure yourself of adequate sleep and food before flying?

3. What type of flying do you consider most tedious or fatiguing?
IFR ..... VFR ..... Night.....
Operational ..... Training .....

4. What is the longest time you feel you could operate your type aircraft (specify type) under optimal efficiency; that is, by not lowering your standards and remaining entirely alert? Type aircraft.

5. How many such flights per 24 hours do you feel should be the maximum to avoid fatigue?

6. How many hours of flight time per month do you feel is necessary to maintain optimal flight proficiency?

7. Does your squadron have a definite policy regarding flight time and fatigue, such as maximum flights per day/week/month, and the scheduling of early flights after a "late-late" hop the previous night?

8. Are you familiar with OPNAV Instruction 3740.7 regarding requirements for "Fitness of Flying Personnel"?

9. How often have you flown from a training hop when you were fatigued enough so that you felt you weren't really "up to par"?
Never ..... Rarely ..... Frequently .....

10. Have you ever cancelled a training flight because of fatigue?

11. Have you personally witnessed or participated in any aviation incidents where fatigue was a primary factor in a "near miss" or accident?

12. Many pilots have additional duty jobs of a demanding type. Which duties do you find most tedious, and do you think these duties interefere with your flight proficiency?

13. Assuming fatigue in flying is caused more by mental stress and tension than actual physi-

an announced special weapons loading exercise. As a special weapons loading officer, he worked loading and preflighting aircraft throughout the morning. During this period he was unaware that he would be ordered to fly later that day. One of his squadron mates recalled seeing him trying to catch a snatch of rest that morning with this head down on the squadron duty desk. At the time of launch it had been some 25 to 30 hours since his last full 8 hours of sleep. Lack of sufficient sleep plus the pressure of the loading exercise undoubtedly produced a state of fatigue during the flight, the reporting flight surgeon states.

Along with lack of sleep, other factors have an important bearing on fatigue. One authority has stated that "the mental state of the individual at any given time is both a direct cause and a contributing factor in his feeling of fatigue. Boredom, monotony, frustration, conflict and many other mental states, although not directly identified with fatigue, are very definitely the contributing causes of fatigue."[2]

What can be done to reduce fatigue in aircraft operations?

Aircraft design, personal equipment engineering, mission planning and a continuing education pro-

1Armstrong, Aerospace Medicine, p. 525.
2Simmerman quoted in AD267098, *Vigilance, Fatigue and Stress in Air Surveillance* (SAGE), p. 82.

ON FATIGUE

cal exertion, do you feel the "expert" is less subject to fatigue than the proficiency pilot?

14. Do you feel that personal stresses (e.g. financial problems, marital difficulties, illness in family, etc.) are important contributing factors to mental or "chronic" fatigue?

15. Would you request to be grounded if you were worried about some serious personal problem?

16. Do you sufficiently understand the meaning and various causes of fatigue so that you could recognize the signs and symptoms in yourself and take appropriate action?

17. Do you routinely consult your flight surgeon regarding fatigue or other factors that you know may interfere with your flying performance?

If not, is it because you:

a. Don't feel they're important enough
b. Don't want to risk being grounded
c. Have no problems of this type
d. Don't have confidence in your flight surgeon

18. Do you feel being grounded temporarily for symptoms of mild fatigue would be associated with a negative attitude or stigma in relation to your fellow aviators?

19. Do you feel your flight surgeon and safety officer could do more in this area of fatigue?

20. How frequently (estimate per week) does "night life" or late hours interfere with obtaining adequate (8 hours) sleep?

21. Would you, or have you, flown with a "hangover"?

22. What type aircraft do you fly?

23. The following is a list of some of the many factors that produce fatigue. Check five (5) that you feel are most important in regard to fatigue and aviation mishaps.

- Hypoxia
- Inadequate diet
- Inadequate sleep
- Inadequate relaxation
- Personal tensions and stresses
- Prolonged work hours
- Minor illnesses
- Excessive alcohol
- Excessive tobacco
- Excessive coffee
- Demands & stress of actually flying the aircraft
- Physical over-exertion
- Excessively long or too frequent flights
- Noise, vibration of aircraft
- Misuse of flight equipment (e.g. No anti-G suit, poor fitting 0_2 mask, etc.)

You are welcome to contribute any ideas or suggestions regarding the prevention of fatigue.

gram are important factors in keeping pilot, crew and ground personnel's fatigue to a minimum.

On the local level, the key to the fatigue problem is the individual himself. Here the factors involved are maintaining top physical condition and a good mental attitude, eating regular meals and flight lunches, observing oxygen discipline in flight, avoiding excess smoking and drinking, getting plenty of sleep, and keeping family problems and anxieties from interfering with the job. A second key is the supervisor's understanding of the potential danger of fatigue problems. Improved scheduling by superiors, would avoid the fatigue which can be caused as much by too little activity (flying or otherwise) as too much activity.

Better living quarters at stations and bases and aboard ship would help in the anti-fatigue program. A well-rounded schedule of *all* activities aboard ship could be promoted by shipboard gym rooms with workouts and professional physical care.

If you have constructive suggestions, local or Navy wide, how about letting us hear from you.

Flight Hour Limitations to Control Fatigue

Concerning pilot fatigue and flight hour limitations, the question was raised of whether the rate of fatigue onset was the same for pilot and copilot. The purpose in posing this question was to compare their respective duties and perhaps justify a request that copilot be permitted to fly one hour more than the six hours limitation allows. In effect, an aviator would be permitted to log 3½ hours as copilot and 3½ hours as pilot in a given 16-hour period. However, the consensus of opinion of this committee was that even though the copilot may not be as actively engaged in control of the aircraft, he is still subjected to the same noise level, vibrations, and mental concern for the safety of the flight. Therefore, no recommendation was made to request any change in existing regulations concerning this matter.—*MAG 16 Safety Council, January 1962*

Fatigue on Transpac Flight

Fatigue was evident in many of the pilots during the operation but in no way was a detriment to the operation in general. Fatigue was especially notable at the conclusion of the Wake to Guam leg. The reason for this I believe is that the Hawaii to Wake and Wake to Guam legs were accomplished on successive days with only an overnight layover at Wake Island. It was originally planned to stay only overnight at Guam and fly to Japan the following day. These plans were cancelled because of marginal weather at Atsugi and the obvious tiredness of the pilots. This decision was a wise one.

The pilots personally tended to downgrade fatigue as being of any significance to them personally. Personal observation of them tended to contradict this. Another point which had some bearing on this was the time changes with each movement westward. For instance, they flew to Hawaii and gained 2 hours. So a 2200 bedtime was actually 2400 where they were used to living. At Wake at 2200 bedtime was 0200 bedtime back home, at Guam an 0400 bedtime. The diurnal rhythm of the human body does not make this transition quite as rapidly as our flight across the ocean was accomplished. Also, all hops were scheduled for early morning launches necessitating the pilots' arising around 0500 to 0600 in the morning. On each leg then they would arrive early in the afternoon.—*Flight Surgeon's Report on TransPac flight, from "The Hot Mike"*

The GREAT GRAY Area

by LT Benjamin O. Bibb

Flight is a journey or voyage through the air, so says Funk & Wagnalls. (Thought I was going to say Webster, didn't you?)

Monotonous sounding, is it not? Sooo, let us expand on this definition for our present purposes.

Flight is a journey or voyage through the air terminating at a planned destination with the aircraft in mint condition and the pilot serene and sound. It is bracketed fore and aft with a climbout and a letdown, the first of which should be done properly, the second precisely, and both alertly. Any flight resulting in unnatural wear and tear on the pilot or aircraft, terror for persons in the aircraft or out or great stacks of paperwork in justification and explanation is an unsuccessful flight, or Flop Hop.

A person looking about himself with the well known jaundiced eye might say, however, that in some cases flight is that great gray area between a takeoff and a landing.

The old art of flying the iron beam (L & N to Memphis, turn south on Illinois Central for New Orleans) is utterly passe'. Simply is not being done by our set any more. Electronic beams and pseudo-magical emissions have completely replaced the old landmark-to-landmark routes. And just barely in time, too. The landmarks were getting worn away by airplanes bouncing off them.

As you probably know, electrons are tiny little electric corpuscles that ricochet around through wires and condensers and thingamabobs, moving sundry

pointers and dials into positions which, when correctly interpreted, present useful information to a pilot. Said pilot can then superimpose said useful information onto shifty little charts which will in turn enable him to remain on a chosen route most of the time. However, sometimes hungry little cosmic bacteria get in the thingamabobs and gobble up the electronic corpuscles, so the information presented is either feverish or nil. Pilots who are not somewhat prepared for this horrible eventuality may experience coronary nausea, or heart-in-throat trouble.

A for-instance:

Especially since the coming of age of jet aircraft and VFR-on-top flight, controllers sometimes have to deal with the pilot called The Actor. This intrepid aviator files a VFR-on-top flight plan to NAS Terminus. He estimates one-plus-thirty enroute, with two-and-twenty fuel. He makes his climbout, points his machine generally northwesterly and checks his clock.

At or about the time his first reporting point is due he arouses himself and tunes in the appropriate Vortac. Nothing much happens except a vague hiccup from his indicator, but he assumes this is only instrumental spring fever so he makes his report. He shrugs off a slight unrest, raps his clock smartly, and intrepidly continues. His Tacan gives him nothing but a blankly challenging mechanical stare at his next check point, so he reports in by estimate. After all, Terminus is good VFR. The forecaster said so. At the end of 89 minutes exactly he looks down and *Behold!*, Terminus is not there! Plainly it has been moved, perhaps to a new location under that magnificent unpredicted fog bank. He sets up a kinda sorta roundy-roundy search, but the entire countryside is inhabited only by the fog bank to the east and thickly wooded hills to the west. The Actor finally gives a tentative call to Terminus Approach Control. They answer with a "go ahead."

And he loudly and intrepidly transmits, "This is Navy Jet four three two one, approximately grumpelty miles soorth, request a *practice* DF steer, *simulating* navaids out, over?"

Maxim: A little reluctance* is a dangerous thing.

The man who first said, "Pride goeth before a fall", said a Mk I Mod IV mouthful. Since he said this in the days when only birds and angels flew, and people who made such prophesies as that man would some day take to the air were promptly and gleefully made the main attraction at a stake fry, he would no doubt be astonished to know that his saying often refers to a drop from flight level three five zero. The "fall" in this case is some considerable, and the aircraft he left to its own wretched devices becomes an aluminum shower that frightens and endangers wildlife below, causing much acid comment from the Conservation Lobby.

Now don't get me wrong. As a firmly grounded controller I have no personal objections if a pilot elects to switch to a non-powered nylon handkerchief for the remainder of his journey. Each cat to his own kicks. I, myself, would rather main line bubble

*Change 1 to Maxim 1

gum. Others go out with girls.

Some years ago a brand spanking new naval aviator was out on his very first cross-country flight in an F6F when weather began to close in below him. He quickly found himself on top of a low overcast and at about the same time found he was sans low freq range receiver, which same had silently and unobtrusively expired. Nothing was left for his navigational use except a compass, a VHF set, and his best guess. Since there did not seem to be much point in doing anything else, he kept boring along.

Eventually he found a hole in the overcast with a comfortable looking distance to the ground beneath it so he corkscrewed through. The landscape was strange and lonely looking, but still he kept boring along, looking with the eagle eye and muttering bad words with unrestraint. Suddenly he saw below him a very characteristic square pattern of antenna towers. He keyed his microphone, and stations for miles around heard this plaintive call on guard channel:

"This is Navy one two three four. Radio range station below me *IDENTIFY YOURSELF*, OVER!"

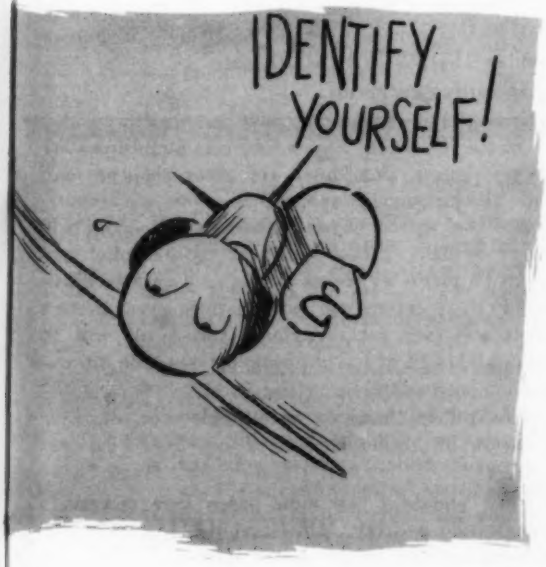
Laugh if you want—he got results. He attracted attention, and he was not in the slightest embarrassed about it. Perhaps some time in the past he had been exposed to

Bibb's First Admonition:

Pride also maketh a shoddy shroud.

(*And a chilly one.*)

Like birds, pilots tend to run in species. The Common Disbeliever is the specie that locks onto an idea and will not unlock until jarred loose—in some unfortunate cases.



Like so—

"Navy blank blank blank, you are cleared to the Navy Bigtown omni, maintain specific thousand. Upon reaching the omni, cleared for an omni approach to the Navy Bigtown airport with a radar pickup, runway niner, winds east one zero." (Calls and extraneous scam will be eliminated for brevity.)

The pilot reports over Navy Bigtown omni commencing approach. Navy radar calls him. "Do not have you in radar contact, continue omni approach."

A short time later radar calls again. "I have a radar target fifteen miles northwest appearing to be making an approach to Bigtown Municipal."

"Negative, I am making approach to Navy Bigtown. Estimating the omni on final approach in one minute."

"Believe you are making approach to Bigtown Municipal. I have no other targets in the area. Turn right heading one eight zero for identification."

"Negative, radar. I am over the omni, lined up on final approach. Cancel radar pickup."

"Bigtown Municipal has no other aircraft on approach. Radar target is still making approach to Bigtown Municipal. Request you level off, turn south."

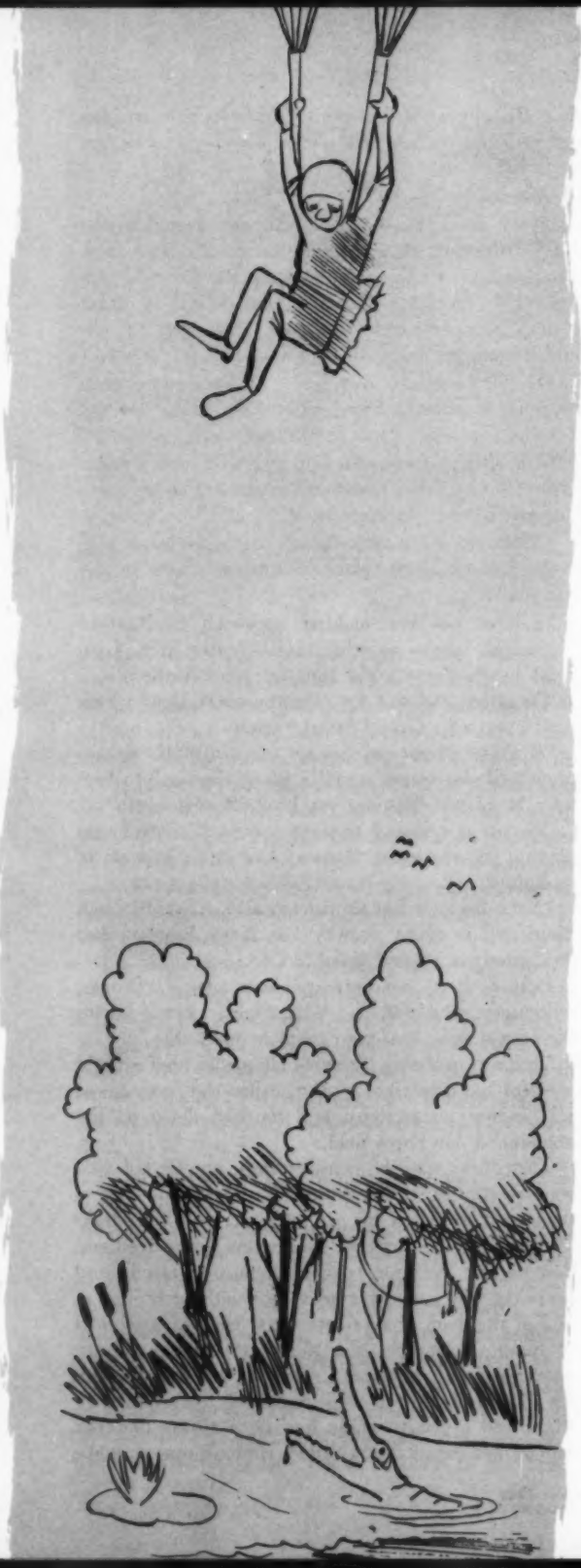
"Negative, radar. I thought approach control said landing runway niner. Runway five or six appears to be lighted."

"Navy Bigtown has no runway five or six. Bigtown Municipal is using runway six. Navy Bigtown has dual runways niner lighted."

Ensues short and very pregnant silence. "Roger, switching to the tower for VFR landing. Errrr, advise the Duty Officer that your omni is unreliable."

This was probably the same chap who filed a flight plan for the municipal airport, called the Navy tower for landing instructions, and touched down on the abandoned Air Force field.

Then there was the conscientious, precise lad who was resolved to set the modern Naval Aviator longevity record. He knew his aircraft cold, used his checkoff lists faithfully, took no chances ever, practiced and flew perfect instruments, made reports carefully and correctly, and asked for assistance without hesitation and at the drop of a fail-safe flag. He was machined to minute tolerance as a pilot, as spic-and-span in action as in appearance. Until, that is. Until the day his blowtorch blew a valpack full of rotor blades in flight and necessity made him do a rocket powered half-gainer out of it at altitude. He took time to make



his emergency broadcast, just as he had been told to do, but he had never practiced making emergency broadcasts. Who does?

"MAYDAY! MAYDAY! MAYDAY!" he squalled. "This is Joe Smith, ejecting over a big swamp!"

It took considerable time to determine which plane Joe was flying, where he was bound, and which of the numerous big swamps he could have been over. Joe was a mighty tired and hungry Smith before he was located. The SAR Coordinator became an old man that morning, trying to guess where spic-an-span Joe was when his chute hit the fen.

A bit of disciplined verbosity is necessary—when time allows—in practicing the vocation of screaming for help. Ratio: pilot is to information as controller is to assistance. But the pilot who talks as though he were being reimbursed by the word is almost as bad as the franctically terse one.

"Friends, roamers, and controllermen, lend me your ears. My sky chariot has developed rare twitches and uncommon noises and appears to be coming all over unstuck. I am of the considered opinion after abbreviated staff study that I should transfer from it forthwith. I calculate by deduced reckoning means to be at about thirty-one degrees eleven minutes north latitude, ninety degrees forty-seven minutes west longitude. I shall utilize the Martin-Baker automatic goodbye device and my trajectory should take me slightly southward. Upper winds should be considered in plotting my probable impact area. Thank you for hearing me out. I remain your humble servant, John Paul Schmatz, Lieutenant, USN, age twenty-nine with a clear conscience, now departing F5Z bureau number 151151. GERONIMO, out!"

No further comment.

Some day I, as all good controllers, will go to that Great RATCC in the Sky, where communications are always perfect, procedures are never changed, and and all instrument approaches—even surveillance radar—end up on runway centerline. Birddogs will never oscillate, Tacans will lock on instantly, and approach plates will be as simple as a cartoon drawing. Perhaps things will be so perfect, even, that no pilots will ever get directional vertigo. It will be enough, though, if I could hear just one time a transmission such as this:

"Hello down there, you nice people with your little electronics seeker devices. *I am lost. Find me.* Over."

Then wouldst I cast mine happy eyes upward in supplication and say, "Oh Great RATCC Officer, let me stay forever. This is indeed Heaven!"

LANDINGS

Selected Items From Aviation Safety Council Meetings

Duty Pickup

During any runway emergency, it is desired that the squadron whose aircraft is concerned be prepared to move the aircraft as soon as the aircraft lands. Often an aircraft is on the runway for an appreciable time before the blown tire replacement or ground safety pins are available. Knowing what may be required before the aircraft lands, the squadron should have the equipment standing by to help clear the runway as quickly as possible.—*NAS Oceana*

Status of Runway Duty Mobile Tower

The MAG-12 ASO reported that the mobile towers had been positioned on the West side of runway 19 and the East side of runway 1. This was the result of the mirror being placed on the starboard side of the runway and the LSO requiring the communication facilities of the mobile tower to augment his signaling devices. A request for a commercial power outlet to supply power to the mirror and the mobile tower has been initiated to higher echelons. When this installation is complete, the mobile tower will then be moved as the runway is shifted, in lieu of utilizing the alternate tower on runway one which has inadequate facilities. It was reported that the Runway Duty Officer order would be rewritten to include notifying by land line telephone pertinent squadrons and Group when an airborne emergency has been declared or an aircraft has been disabled on the runway or taxiway. The new order would direct that the runway landing reports be promulgated to Squadrons for study to check landings and pattern trends.—*1st MAW*

After Landing Check List

The text of a dispatch concerning positive identification of switches and control units by pilots was reviewed. It was noted that some pilots are completing the after-landing checklist during the landing rollout. Such a procedure could easily precipitate a pilot-caused accident because of preoccupation with matters not pertinent to the landing phase. The board recommended that all pilots be cautioned concerning:

a. This unsafe practice and its probable consequences.

b. Concentration on the landing phase until clear of the runway.

c. With the exception of flaps, that switches and controls listed on the after-landing checklist should not be activated until clear of the runway and communications have been established with ground control.

d. Plane commanders' responsibility for complete crew briefings in all phases of flight and in particular the copilot's duties during the takeoff and landing phase.—*Aircraft Accident Prevention Committee NARTU NorVa*

BLOWN TIRES

Another routine emergency?

The first blaze of enthusiasm over jet airplanes gave birth to a saying: "jets are easier to fly than props." A little while later, made wise by the unending growing pains of the jets, pilots added a postscript—"as long as nothing goes wrong."

A good bit of effort is consumed in simply preparing for and thinking about what action to take in case a "system" gets out of whack. The list can get pretty long; utility hydraulic system failure, loss of generator, brakes, . . . , but most of the time the situations are not catastrophic. These things happen often enough and the endings are successful enough to look on them as something like "routine emergencies." And this is what a blown tire on a jet seems to be.

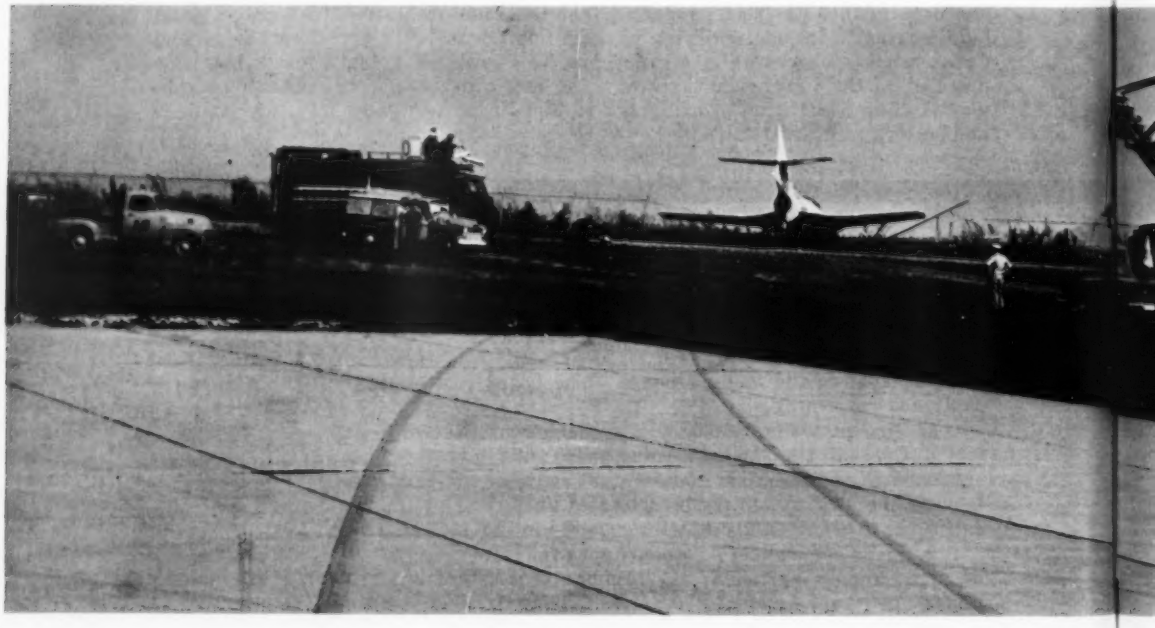
A period of speculative paper shuffling and appropriate pencil scribbling tends to confirm the opinion, already held privately or openly by some pilots, that landing with a blown tire or experiencing one on rollout is not particularly hazardous.

Then why bring it up at all?

In early 1961 an F9F-8B received strike damage and the reason given was "starboard tire blew on takeoff roll causing aircraft to swerve off runway." Several months later the Air Defense Command had a small flurry of accidents resulting from blown tires on high performance jets. One remark in the ADC story was of interest: "we (in ADC) knew the F-100 was a wild beast on a blown tire. . . ."

This raised a question. How did Navy jets as a group react to a blown tire? Aircraft exteriors may differ but all of them are basically alike. If one swept-wing jet was a "wild beast" on a blown tire, perhaps others would show the same tendency.

However, no such creature appeared when available in-



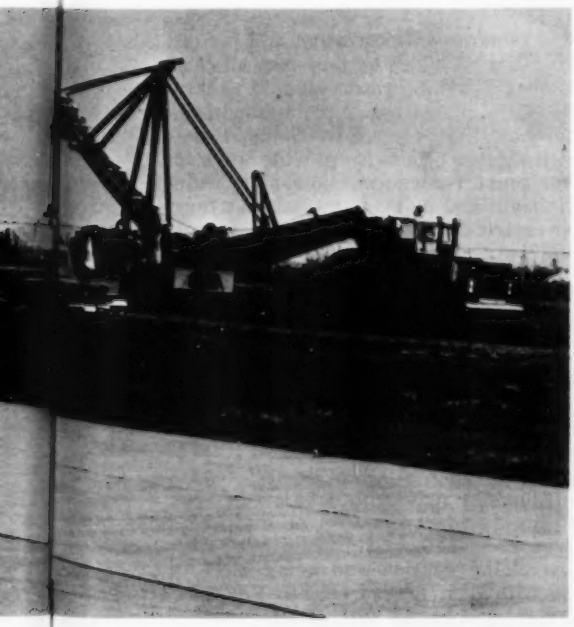
formation on Navy aircraft was examined. It must be admitted that "available" information is far from being "all" information. Most of it comes from four years worth of Flight Hazard reports dealing with emergency field arresting gear, a report eliminated in late 1961. But even with a limited amount of raw material, we may get an approximate idea of what happens when a tire blows its top.

Directional control is the big question mark. Will the aircraft roll straight, or if it begins to swerve, can the pilot bring it back to runway heading? Bare statistics tell a fairly cheerful story. In four years, 134 incidents of this nature *have been collected* but only 16 aircraft were apparently uncontrollable enough to swerve off the runway.

In the same period approximately five accidents involved a blown tire; two aircraft went off the side of the runway following field arrestment, three went off before arrestment. The total damage was two strikes, two overhauls, and one substantially damaged. Wet, soft ground adjacent to the runway contributed to several of these accidents, swerving across the arresting gear chain collapsed the nose wheel on another aircraft, and one strike resulted when an aircraft went off the runway into salt water. All in all, the accidents display no significant difference from the incidents except in the degree of damage.

As to controllability with a blown tire, almost 60 percent of the incident reports made no mention of any difficulty with directional control. Where a swerve occurred pilots seemed to make an almost instinctive correction with rudder first, then wheel braking opposite the swerve.

It might be thought that blowing the remaining main gear tire would be a traditional antidote for a swerve but this happened in only 14 cases and in most instances it came merely from heavy braking, not a deliberate attempt to blow the tire. The results suggest that a swerve may be decreased or eliminated when this happens as only six aircraft continued off the runway (five were F9F-8s) when the remaining tire was blown from braking action.



As the bulk of the available incident reports concern field arrestments, it follows that there will be a high percentage of pilots who dropped the hook when experiencing a blown tire. Here we might also separate blown tire situations into two categories: (1) those where the pilot touched down with a known or suspected blown tire, and (2) those which occurred unexpectedly on rollout or abort.

All told, 98 of 134 pilots used the arresting gear (73%). The percentage was higher in the group which touched down with a blown tire (of 36 such incidents, 31 were arrested, for a percentage of 86). This higher percentage is due to the preparation, however limited, which could be made for the landing. Midfield arrestments and short field arrestments were the favored technique with a few of them LSO monitored. A foamed area on the runway was seldom used.

The case for arresting gear seems fairly solid since only three out of 134 incidents indicate the aircraft left the runway after engagement (two of these were aborted takeoffs). All NATOPS manuals are in agreement on this: "Anytime . . . it is known that a directional problem exists . . . the short field (or midfield) equipment is utilized." The F4D and F3H manual adds an item which can well apply to other jets: "If a tire blows while on roll out, attempt to keep the aircraft rolling straight ahead. Be prepared to shut down the engine and drop the hook."

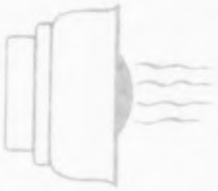
Now we come to what may be the most provocative item on the agenda. How much directional control is left to the pilot when a tire blows and the aircraft starts to swerve? Recall that nearly 60 percent of the incident reports mentioned no trouble on this score. Of course the fact that it was not mentioned does not eliminate the possibilities of difficulty but we must assume there was no trouble worth talking about. Some reports did not contain enough information to estimate the aircraft action or pilot reaction; however, we can say with some accuracy that about 20 pilots experienced a definite swerve or a strong tendency to swerve and they decreased or eliminated it with rudder or brake, enough to stay on the runway at least. A half-dozen pilots were unable to obtain any corrective action although they also stopped on the runway.

So, in general there is usually enough control to maintain a track within the boundaries of a typical Navy runway (200 feet wide). Operating off of Cherry Point's 400-foot wide runways gives a little added premium to a blown-tire landing, as illustrated by the pilot who finally got stopped 160 feet off of the runway centerline following a swerve.

About all this brief look has done is confirm the opinion that a blown tire is relatively harmless as an emergency but it cannot be treated casually.

In this case the pilots' best friend is an early correction against a swerve and the arresting gear.

In reviewing this article, and the unhappy case of the *Cougar* left, an NASC analyst asks "What is the maximum crosswind component for *your* bird?" He notes also that "the A4D is of course a special case, but in others, a landing with moderate crosswind from the 'good' side following a blown tire, can turn into an unplanned, unrehearsed, undesired and unnerving excursion."



from the Air Boss

Helo Loads

The practice of alternating loads of personnel and cargo/vehicles in the HR2S raises a problem in that to carry personnel the cargo ramp must be removed as a safety measure. Insofar as practicable, serials should be assigned insuring consecutive loads of one or the other type.—*USS VALLEY FORGE Safety Council Meeting*

CCA Gear Deficiency

Comment was made on a recent near miss in the CCA pattern between an A4D and an AD. It was caused by limitation in the CCA gear and the inability of the controller to positively control aircraft at 5 to 7 miles range due to sea return on the 20-mile scope and fade on the final gear. It was recommended that procedures be established to cover this deficiency in the gear.—*CVG-5*

Help Wanted

The Captain closed the meeting with a few remarks on motivation and how it can be instilled in the flight deck personnel. He mentioned the fact that all jobs on a ship are important but that flight deck work is "high priced" since it is here that a ship makes or breaks her reputation. Flight deck work is plain labor in a business more hazardous than diving, yet the incentive of extra pay is not there. This is why the supervisory personnel must invent or otherwise provide ways to motivate these people. The Captain asked for sound recommendations as to ways flight deck personnel can be given extra privileges and be made to feel that they are a special group, thereby developing better espirit de corps. —*USS INDEPENDENCE*

Helo Chocks

The question was raised as to the safety aspects of helicopters lifting from the chocks on deck and it was pointed out that in some instances it might be necessary for the helicopter to set back down on deck before clear of the chocks. Even though in most instances the Air Department preferred the chocks to remain to preclude movement of the aircraft if brakes or a tail wheel lock failed, under certain takeoff conditions the chocks were removed. Also on test flights and hover checks they were removed. The squadron representatives stated that they were satisfied with the procedures used and had experienced no difficulties in this respect. It was recommended that the current procedure be continued with the Air Officer in Primary Fly Control exercising caution and being alert to conditions under which chocks might constitute a hazard.—*USS VALLEY FORGE Safety Council Meeting*

Naval aviation naturally pivots on the carriers, the tailhookers and long-range search planes. There is another kind of naval aviation though which, although it makes no bold entries in history, does provide some interesting footnotes. Its tasks are much in the manner of theater stage hands who support the main performance out front. This back stage work is the day-to-day shuttling of people, cargo, and planes, especially planes.

Assignment is simple: "Deliver BuNo umpty-ump to such-and-such." Accomplishment is more difficult. Often it is complex, sometimes confused to the point of desperation. Almost always there is an element of humor which becomes evident only after the job is done. The trials and tribulations in the following story may have a familiar ring. If so, you have been "on the road" and appreciate the subtle meanings attached to the word "patience."

The Trials and Tribulations of (VRF)-32's First Transatlantic Ferry Job

LONG GONE

by **Ralph Markley, ADC/AP**

This is not meant for a best seller. It's just a rough resume to let a few people know why we were gone so long—32 days to be exact.

On 14 July we departed North Island in an R4D-6. Destination: Naples. The crew was anxious to make the trip so after a fuel and *oil* stop at Dallas we refiled for the east coast. Some 7.5 hours later the port oil tank was again 11 gallons low when it was checked. Both engines were low time, newly overhauled. The oil was clean and appeared unused and

coming from the oil breather. A detailed discrepancy report was made out concerning the high oil consumption plus a few other minor gripes.

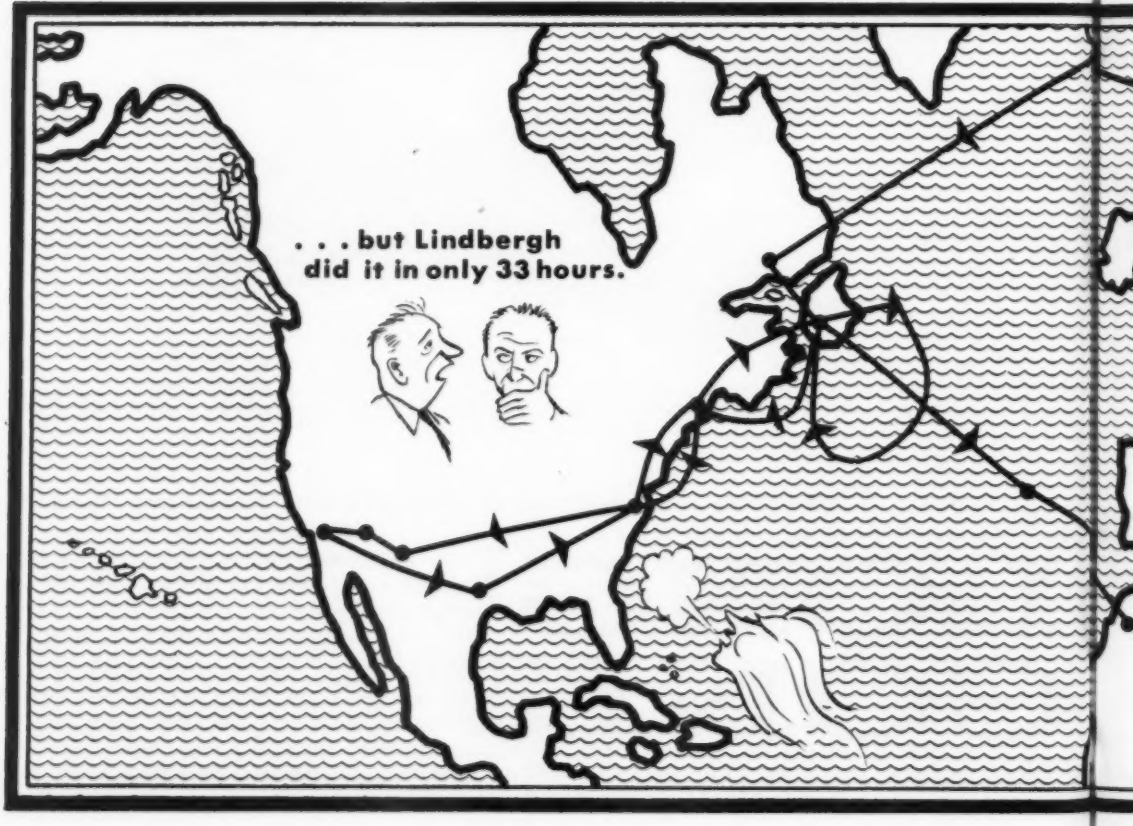
Next day Maintenance made out the necessary work requests and pulled the cowling. We were then told there was a 2 or 3 week reconfiguration work order on the aircraft so we were assigned to ferry a P2V back home. The Italian phrase books were put away.

Three weeks later word was received that the R4D-6 was up and ready to ferry to Naples. On 11 August we again departed North Island working our way east. Transportation was a P5M and it got us on the East Coast the next day. The R4D had been used on a personnel run and was reported to be a "good plane." When asked about oil consumption there was no reply so the tank was dipsticked and found to be 6 gallons low on the port side. This was a consumption of one gallon an hour—the same discrepancy as was reported a month earlier.

Saturday, 13 August, Maintenance started work and on Monday a local test hop showed the oil was still pouring out. Maintenance again turned to and by Tuesday, with no results, an O&R specialist was called in. No trace could be found of our previous discrepancy sheet, work order, who did the work or who signed it off, so they were starting from scratch.

After a day's work no remedy could be found for the oil leak so it was decided to change the engine. A priority order was assigned with completion due in 48 hours. But by Thursday evening there was a dismal outlook both mechanical and weather-wise. A hurricane was headed toward the coast and the weather was expected to be bad for at least a week so we kicked the phrase books into a convenient corner and planned to work our way back to North Island.

Came the dawn and the sky was clear. Aerology reported the hurricane had veered off to the northeast. Maintenance also reported the aircraft would be



ready by noon. Things were beginning to look up. The phrase books and guide books were rescued and dusted off.

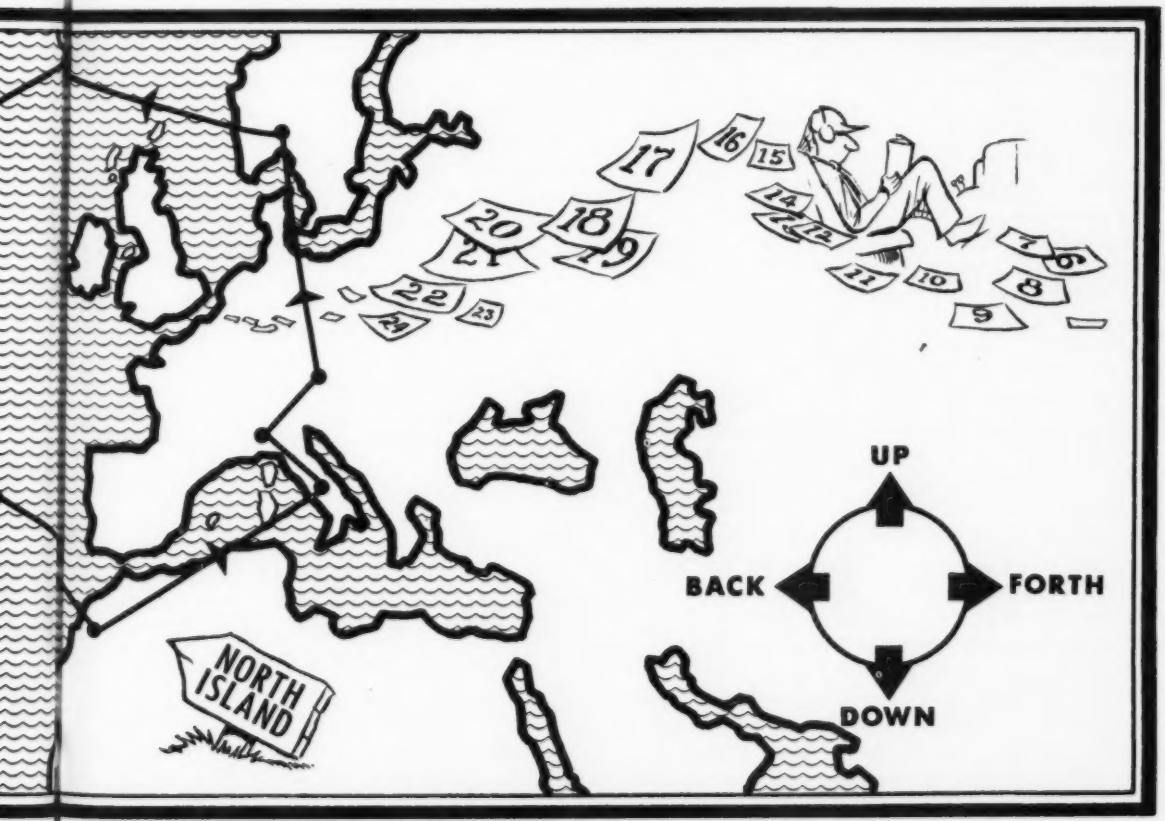
By evening however, we were forced to send another RON mechanical. Final tune-up had not been made.

Saturday was a better day and we got in a successful test hop. Due to the lateness of the day and bad weather further north we RONed at Quonset. Sunday we legged out way on up to Argentia and sent an RON.

Eleven days after leaving North Island we finally got ready to go outside the three-mile limit of North America. Monday morning early we departed for Lajes but on climbout an oil leak developed in the port prop so a turn around was made. The "banjo fitting" was found to be loose, one spark plug lead had come off and several others were only finger tight. After a four-hour delay we tried again. This time we made it but passed through a terrible rainstorm just before going into Lajes. It was an eight-hour flight arriving at night. The weather was deteriorating and to be worse the next day so we refueled and took off in order to stay ahead of the storm.

The beauties of a sunrise over the Atlantic were duly celebrated with warmed over coffee and a soggy sandwich and finally we made initial contact with Port Lyautey. Thereupon all our transmitters failed. Clearance for an ADF approach was received as the weather was 600 overcast with 4 miles visibility. Upon being chocked on African soil we logged 7.2 hours. An RON crew rest was sent and we did get a few hours sleep, followed by a tour of the city of Kenitra.

A good night's rest, a good preflight and turnup and we were hot to trot, it now being Wednesday, 24 August. Then a mag check before takeoff showed excessive drop on the port engine so we returned to the line. A two-hour delay cancelled a stop at Rota where we were to pick up VHF crystals for our



northern return trip.

Once again in the air we headed for Napoli (apparently this is a nickname used by some people). An uneventful 7 hours flight and we landed in Naples, whereupon we learned Napoli is not a nickname.

The crew who were to receive our aircraft had already arrived and had priority with Maintenance in the one hangar space for their acceptance check. The old plane (our transportation home) had second priority. Thursday and Friday went by and on Saturday as we prepared to roll our tired transportation in for a check, another plane came in with priority (flag rank). This check was finished Sunday night so on Monday, 29 August our R4D check was started.

It was supposed to be finished Tuesday night so on Wednesday morning we checked out of our hotel early in the morning to get in a test hop and head for home.

Unfortunately, on turn up the port engine was smoking excessively due to a bad oil leak and there was 125 mag drop on the same engine. The other R4D crew wasn't having much luck with our former plane—they had a bad mag drop, fluctuating oil pressure and numerous oil leaks. They finally did get out that evening while we went back to the hotel and checked in for another night. We were told the plane would be ready for sure the next day (Thursday) so once more we checked out of the hotel early in the morning.

But, the port engine was showing a low compression check so a couple of jugs were changed along with packing the push rods. Back to the hotel and check in again.

Deciding how to beat the system, we didn't check out of the hotel Friday morning—the plane would then be sure to go and we would only have to rush back to the hotel, check out, and rush back to the field. This was considered the lesser of two evils.

Sure enough on turnup Friday morning, the port engine quit when the boost pump was shut off. After three new fuel pumps, freeing the lines of air and various other suggestions they changed the fuel boost pump. By this time it was well into the night so we secured with the hopes of an early departure Saturday, 3 September. All pretense on finding a "system" to hurry up our departure had vanished.

Next day found the vacuum low, a hydraulic leak in the brake system and a new G2 compass had been installed which needed swinging. After a busy day we finally completed a successful test hop but the field went IMC (instrument meteorological condition) so a GCA had to be made. Figuring Naples was our "ill fortune" we decided to leave and go west—to Nice on the Riviera, three hours flying time. During the rush of packing and checking out the phrase books were discarded (practically in mint condition since enough English was spoken to get by on).

Twenty-three days after departing North Island we arrived in Nice. Saturday night and Sunday night were spent there and we departed for Rhein Mein on Monday morning. Tuesday we made it to Oslo. So far the return trip had been uneventful but plug changes and point settings delayed our departure so much that the weather in Iceland was deteriorating rapidly. Consequently it was Thursday when we departed Oslo. No cafes were open for breakfast so 3 dozen rolls had been purchased for inflight rations.

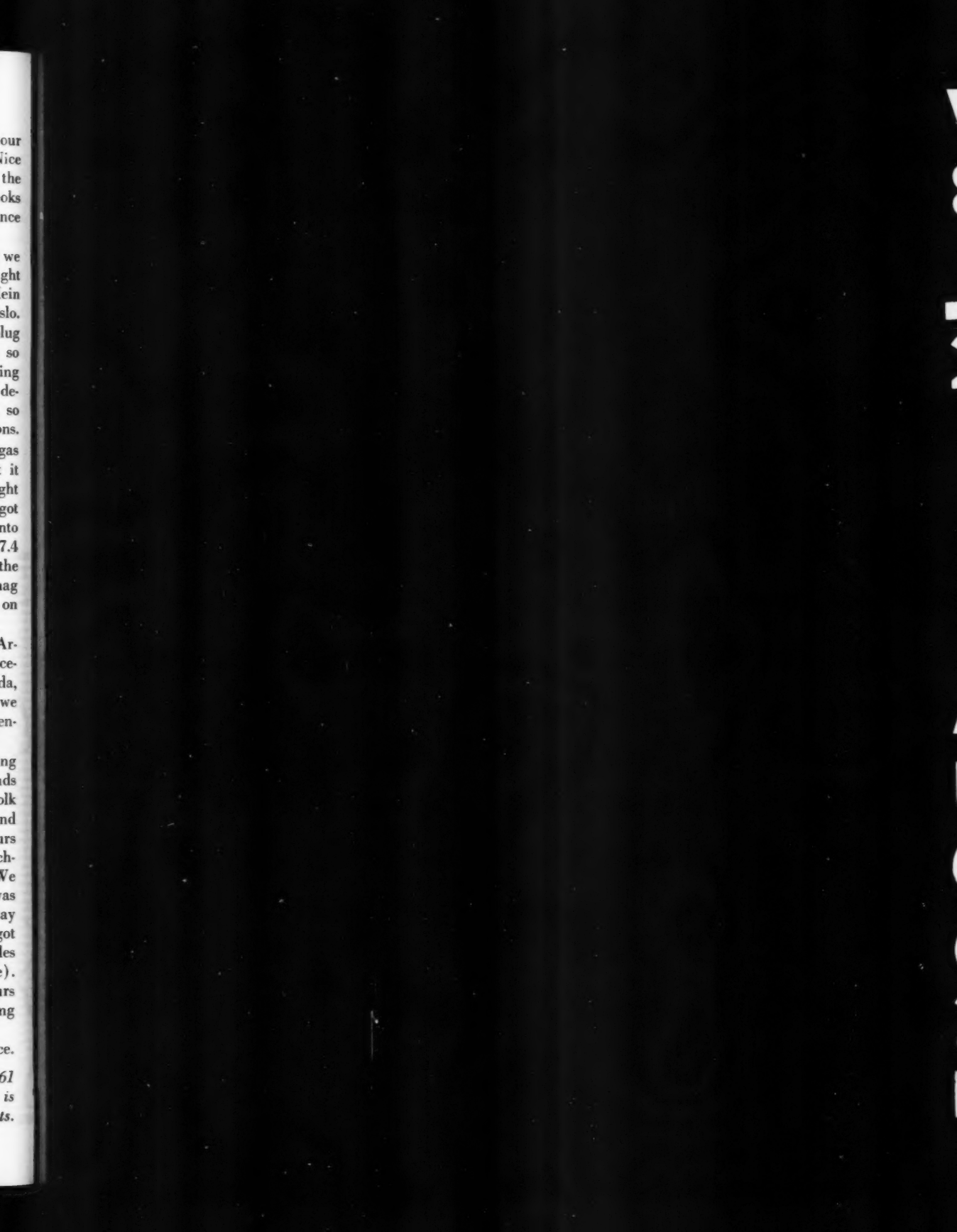
About an hour and a half later, water in the gas caused both engines to sputter intermittently but it finally smoothed out and we pressed on. Icing brought us down to a lower altitude and we like to never got clearance back to minimum enroute altitude into Iceland (unable to establish radio contact). After 7.4 hours we landed in Keflavik and on checking the mags, pow, pow! Sounded like Wyatt Earp. Left mag on the port engine cut out completely, right mag on the starboard engine had a 200 drop.

All hopes for charging right on through to Argentia faded. Friday, 9 September we departed Iceland and 9.2 hours later landed at Goose Bay, Canada, glad to be back in North America. Mechanically we were in fine shape so refueled and went on to Argentia for RON sunset.

Saturday we filed for Norfolk, everyone including the R4D eager to go. But unpredicted headwinds slowed us down to 97 knots ground speed. Norfolk was IFR so we diverted to Quonset for customs, and fuel. After refiling we were in Norfolk 2.5 hours later. Then we found the old bird was to go to Litchfield instead of Jacksonville so it was still ours. We were anxious to get going as another hurricane was heading up the coast but we RONed and next day made it to El Paso. Monday, 12 September we got home, glad to be back after 15,025 nautical miles covering 8 foreign countries (in 32 days of course). We logged 107.2 hours of flight time but more hours were spent working on the planes than were flying them.

All in all it was a fine trip and a good experience.

Only 32 days? An autographed copy of Mech '61 was sent to Ralph by the Approach chaplain, who is currently at sea looking for missing AOCP shipments.



THE OTHER SIDE OF THE STORY

An ACTION-PACKED ONE ACT DRAMA DURING CARRIER QUALIFICATIONS

BEACHCOMBERS A flight of ADs

WEBFOOT the duty deck

"Come on, Beachcombers, reveille. Up and at 'em. It's 0400 and we got to be over the boat at 0630."

"No, sir, the Beachcombers won't be overhead until 0930. We released a message last night setting up a new schedule."

"How about that—Webfoot's Rasberry is out and nobody knows where it is or what the weather is. Saddle up and launch anyway."

"All our NavAids are out. The only thing we have is UHF/DF."

"Roger Homeplate ground control, understand the field is finally VFR. Beachcomber flight, same brief on TACAN channel for Webfoot."

"What's holding up the S2F launch? We've got to keep the deck busy."

"Say Webfoot base, you've been giving UHF/DF steers for about an hour now. What say we switch and you give some long counts."

"The Beachcombers can't locate us on their homing gear either. They're climbing to get a position from GCI and Homeplate Tacan."

"O.K. Webfoot tower, have you in sight now. Do you have a Charlie time?"

"The deck isn't ready so Bingo the Beachcombers due to their fuel state."

"Roger your message Homeplate but I can't understand why Webfoot said we were unreported. We were talking to them for a solid two hours."

A Philosophy of Safety for NAVAL AVIATORS

by Lt. John E. Laye

Naval Aviators often believe themselves bound and encumbered in the name of safety. The physical restrictions are apparent to fledgling and experienced pro alike—hot suits, high-top shoes, flotation vests, hardhats, sticky gloves and a myriad of straps. The Aircraft Commander feels the more subtle mental pressure from a surrounding web of procedures, rules, instructions, regulations, plans and other "paper fences," beyond which he may not move, lest he give some sanctimonious chairborne aviator opportunity to censure him. Even the eager beginner chafes at rules forbidding intentional securing of an engine below 6000 feet, simulating failed engines below 300 feet, . . .; to him they are unreasonable restrictions on realism in his training.

Such men feel competent to handle whatever they must for the completion of any assigned mission. They stand ready to make any sacrifice for their

country, and are not awed by a danger—on the contrary, they take pride in risks a professional fighting man takes as part of his lot. All this speaks well for the aggressive mental attitudes essential to professionalism in Naval Aviation, but it takes more than enthusiasm despite danger to achieve the level of a true professional.

Our brothers in ships who deliver their ordnance from turrets and tubs use a phrase to describe potential efficiency which seems equally apt for airborne ordnance delivery teams: "weight of metal on target." Further, after delivery "on target," a commander must be concerned with what remains to him to deliver again. A specific expression of weight of metal on target—after the engagement—remaining forces will likely be reduced to a rather prosaic set of numbers. Let us examine some such (hypothetical) numbers to see if a professional attitude about safety affects weight of metal on target and forces remaining.

Consider a squadron of aircraft. Ten planes ready to seek out and destroy the enemy. In this squadron, crew has given careful thought to the every day hazards in flight operations and procedures have been established eliminating or at least minimizing these hazards. When the order to launch is given, repeated drills have taught each man his job, and a sequence to complete preparations for takeoff speedily but without haste and confusion. As the flight progresses, all fly "encumbered" by standard operating procedures, harnesses, etc., originally put forth in the name of safety. Each crewmember now regards such safety procedures as assistance throughout the mission to recovery and readiness for the next mission. The Ten were ready, ten recovered and ready again.

Another squadron of ten. Ten planes, but only nine crews ready. One crew is waiting for replacement pilots. After a routine carrier landing, the pilots unstrapped to be more comfortable taxiing to the deck-edge elevator. The brakes failed to hold on a wet deck as the ship heeled and the plane went over the side. The other crewmembers, "bound" securely into seats by their straps, swam clear when the plane came to rest in the water. The plane was quickly replaced . . . but not the pilots.

Still, nine can be launched. On takeoff, one of the nine loses power, and a ditching ensues. This crew never held ditching drills. All got out by the grace of God, and are picked up by the planeguard destroyer's whaleboat crew (who did hold drills). Now, eight remain airborne, but only seven reach their assigned area. During exercise, one crew relied on electronic navigational aids, but in an actual situation such aids are not available. After becoming lost, the force's combat air patrol led this crew home (where the plane commander will try to explain why he had to break radio silence).

Though seven got to their areas, only six return. One plane received damage which the crew was unable to overcome (no pre-thought nor discussion of possible emergencies). After a successful ditching, the pilot was lost because his flotation vest had no carbon dioxide inflation cartridges (he couldn't bother with such minor details). The remainder of the crew will spend two days on their raft because their IFF wasn't switched to EMERGENCY nor any radio transmission made that they were ditching—too busy securing shoulder harness, stowing loose gear and taking care of those procedures they never bothered with, in favor of comfort.

Presuming that the radio-oriented navigator learns to do without electronic navigation aids before the next launch, and the crew recovered by the destroyer's whaleboat is in shape to fly, eight planes can be launched when next required by this squadron. Not good, compared with squadron one.

What made the difference? ". . . bound and encumbered in the name of safety." Crewmen "bound" to their seats till the plane came to rest—but not the pilots. Instructions about ditching drills (pilots half-full of salt water attest universally to the value of ditching drills). Navigating with something else than the bird-dog; pre-thinking and discussing possible emergencies; checking mae west cartridges; flying with shoulder harness secured and loose gear stowed. Seemingly minor, prosaic items avoided by adherence to ". . . procedures, rules, instructions . . .", that chafe pilots but contribute to "weight of metal on target."

The risks peculiar to naval aviation, we accept with pride. Such risks as can be eliminated through safe practices, we must eliminate, lest they aid an enemy. Aircraft lost must be built anew; crewmen lost must be replaced, then trained. The time thus lost works to aid the enemy. This sort of safety is as vital to fighting men as any weapon. ●

Little Man's Chances

Dear Headmouse:

Last year we had a Charlie accident and lost the safety award to an outfit that flew less than us but went accident-free. This year we are accident-free but we don't quite have the most flight hours and landings that our one big competitor has. They have had two Charlie accidents this year. In the middle of the stream the rules were changed and Charlie accidents don't count. (According to our friendly? competitors they have friends in the bureau.) Why are the rules changed in the middle of a competitive year? Why should a squadron with two Charlie accidents win over a squadron that has gone accident-free if the total point differential is small?

Why has the Safety Center allowed such a farce to be made of a once rich, highly coveted award? It is now better to go accident-free than to win the safety award.

ANYMOUSE

▶ Apparently both you and your friendly? big competitor have not closely studied OpNavInst 3590.5E. The changes from the previous instruction were brought about after some inequities became apparent during the administration of the Fiscal '61 awards. By the time the new instruction had been written, commented on, rewritten, approved by CNO and published, half of the current award year had passed. The first thing that you probably haven't noticed is that a figure called "Total Aircraft Days" is present in the new formula. This figure is there to put you on an even footing with your "big" competitor. Since I assume he has more birds than you, he would have to fly a proportionately higher number of hours to attain an equal number of safety points.

"Charlie" damage accidents were eliminated from the debit score in order to encourage proper reporting of aircraft mishaps. In the past some squadrons have gone to great lengths in attempting to downgrade legitimate "C" damage AARs to Incidents because they were "hot" contenders for a safety award. With no safety award worries, legitimate "C" damage AARs will be submitted as such and the more complete information will provide a much more valuable tool for analysis and accident prevention.

One other big change that you didn't mention is the addition of the aircraft accident rate in the formula. The most recent 12-month rate and accident-free bases for each aircraft were published in June. It often happens that squadrons flying different model aircraft compete in the same award category. With the rate in the formula the squadron flying the aircraft with the greater accident potential will receive proper credit for their efforts. Under the old instruction no such credit could be allowed unless the squadron had an accident and thus received fewer debit points.

Far from being a farce, it is considered that the new formula does much to allow equal consideration for all squadrons, regardless of the size of the unit or type aircraft flown. Our goal is a difficult selection of award winners from many, many accident-free squadrons.

Will be glad to have any further comments or questions.

Very resp'y

Headmouse

Avoid Delay in ATC Departure Clearances (Military)

Dear Headmouse:

Why not revise the DD175 form to a three-page double-carbon form? The first page to be the Proposed IFR Flight Plan forwarded to the FAA ARTCC (Air Route Traffic Control Center) and including only the information required by the FAA ARTCC such as: Aircraft identification, type, TAS, proposed departure time, route, destination, altitude and remarks. This sheet would be signed by the pilot and turned in to Operations minutes or hours prior to the proposed departure time.

After completion of page one, the pilot can proceed with the time-consuming procedures of weather briefings, passenger listings and other preflight planning. Any last minute changes can be forwarded to the ARTCC when filing the completed pages two and three. Conversely, ARTCC can pass changes to Operations for relay to the pilot to prevent that last minute map-fumbling in the cockpit.

The second page would be checked against the original copy and forwarded to the Flight Service Station serving the Military Airport. The third copy will be in the possession of the pilot. . . .

The pilot would be responsible for cancelling the proposed IFR flight plan or submitting a revised proposed departure time.

STAN SHAWS, MAJOR
VMA-351

▶While Headmouse can sympathize with all aviators who have occasionally been delayed at the end of the runway waiting for ATC clearances, he can see no time-saving benefit to this proposal. If anything it would increase the workload of operations and ATC personnel due to

changes, re-routings and cancelled flight plans because of weather, downed aircraft, . . . It doesn't appear feasible to file a proposed IFR flight plan hours in advance, not knowing what the destination weather will be or where the alternate will be. Under present procedures ATC clearances are obtained within 20-30 minutes after the completed DD-175 is filed with the operations duty officer unless the airways are already saturated with IFR traffic. Do not believe your proposal would alleviate an already saturated condition on the airways. Almost all delayed departures stem from enroute IFR traffic and not time lost during the processing of the DD-175 between operations and ATC.

Since receiving your letter, OpNav Notice 3722 of 4 Jan. '62, (Subj: Taxi and Air Traffic Control delays of departing jet aircraft; procedures for) has crossed our desk. It relates directly to the problem of delayed IFR clearances.

Very resp'y,

Headmouse

For Spotting Lights

Dear Headmouse!

I am a flight director aboard the USS HORNET (CVS-12). As we were operating off the coast of California last week, I got an idea that might be helpful to both the pilot and the director while operating aboard a carrier.

The night I got this idea it was about as dark as I've ever seen it, and it was a job taxiing those big S2Fs around without making a mistake. Why couldn't small lights, red or green attached to main landing gear inside the wheel wells be used? The light would shine down on the deck showing exactly how far the wheels were from the safe parking line or the deck's edge. I believe this would give the pilot and the director more confidence in each other on those dark nights. The lights of course would have to be attached in a way that they could withstand the jolt of a landing without shorting out or coming apart.

Wheel lighting would increase flight deck safety when respotting the deck for the next launch. I realize the S2Fs don't have any means of electrical power when the engines are shut down, but for the cost of a small battery, I believe it would more than justify the cost of replacing landing gears and hydraulic lines crushed when a plane is taxied or towed into a catwalk.

MICHAEL S. TUCKER, ADR3

Luminous Tie-Downs

Dear Headmouse:

While wandering around the hangar deck during night flight ops, the thought occurred to me—How many man-hours are lost, and how many accidents result from stumbling or tripping over the tie-down ropes and chains securing aircraft and equipment on the hangar and flight decks?

Could the manufacturers of rope line be induced to weave into the line a few strands of luminous cord of a type that shows up under a red light? The chains could be painted with a luminous paint so as to show up the obstacles. I do not believe that this would interfere with night vision for those who must maintain that condition.

In our squadron, we maintain a bulletin board exclusively for the use of Quality Control, to disseminate pertinent information designed to improve maintenance. So far, the major contributor to this board has been APPROACH.

EARL J. CHAISSON, ATCS
Quality Control CPO, VF-102

► Thank you for the kind words.

While statistics are not readily available as to the number of injuries it does appear that painting chain tie-downs is a possible improvement. Rope tie-downs are relatively low usage items so the luminous thread idea may not be practical. Increased intensity and added hangar deck floodlights similar to new red flight deck flooding may help solve this problem.

Very resp'y,

Headmouse

Why Orange?

Dear Headmouse:

Why is my Mark V antiexposure suit orange? Is there no consideration for my survival in an escape and evasion situation? Why an orange suit when the survival equipment normally carried by an attack pilot already includes a bright yellow flotation girdle, a brilliant international orange poncho, an orange cover for a yellow raft and several signaling devices?

I am very much concerned about the prospect of escaping from an enemy territory dressed and equipped primarily for immediate discovery. I appreciate the interest somebody is showing in my welfare, in making it easy for SAR to find me whether I am down in the Mediterranean or the Okeefenokee, but I am a combat ready pilot first and I think that this should be the prime consideration in my survival dress. If there was an additional requirement for orange apparel why wasn't the discardable torso harness designated orange and the anti-exposure suit green or some other suitable evasive color? Why is my Mark V anti-exposure suit *orange?*

J. D. TAYLOR LT, VA-12

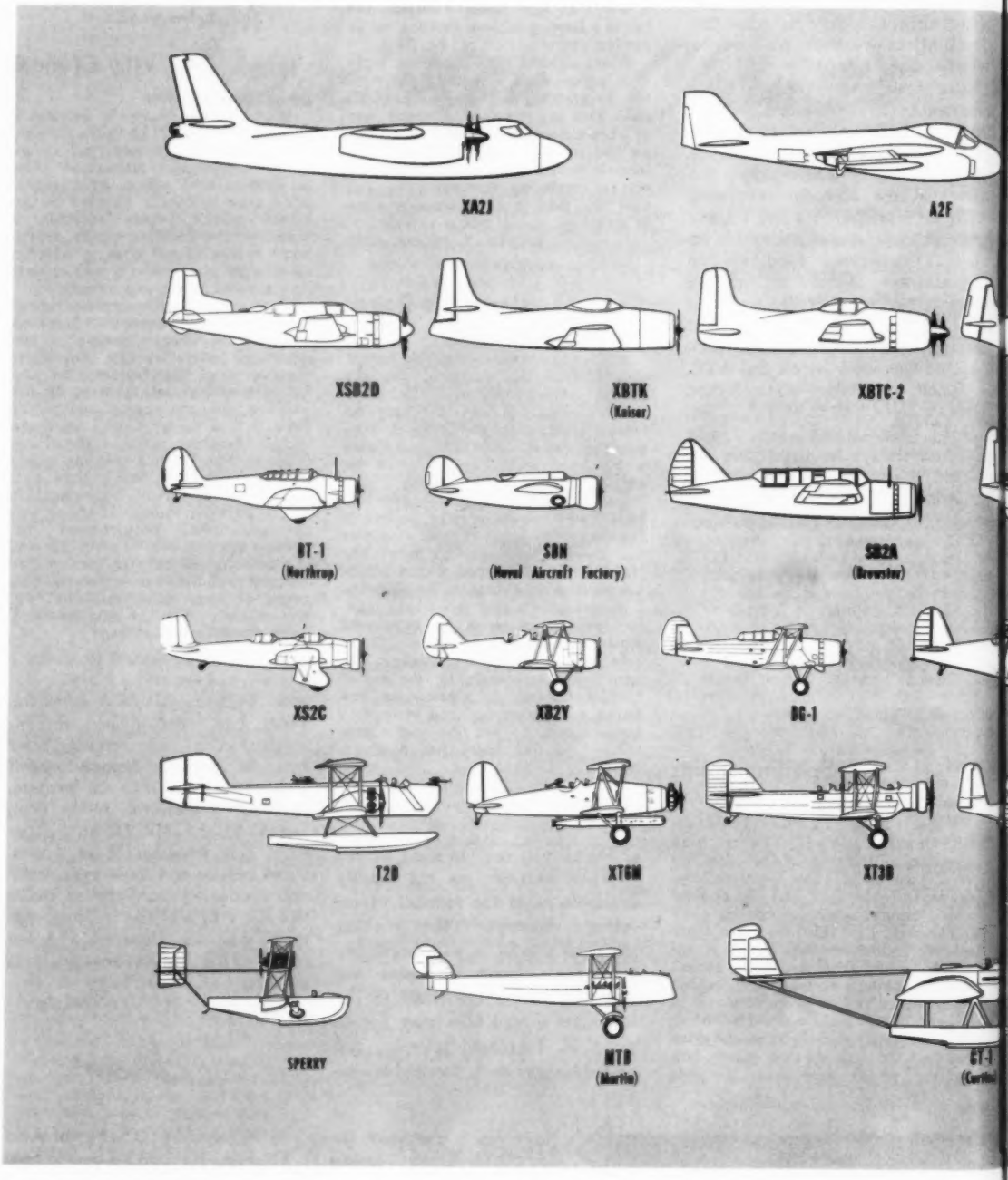
► This is a good question which has received serious consideration at all levels. Your suit is orange because most aviators want it to be orange. Serious objections have been voiced to the Mk IV anti-exposure suit because it is green. Fleet pilots and type commanders requested BuWeps to make the Mk V of a high visibility material and the liner of a green color. This is the reason it is orange.

Very resp'y,

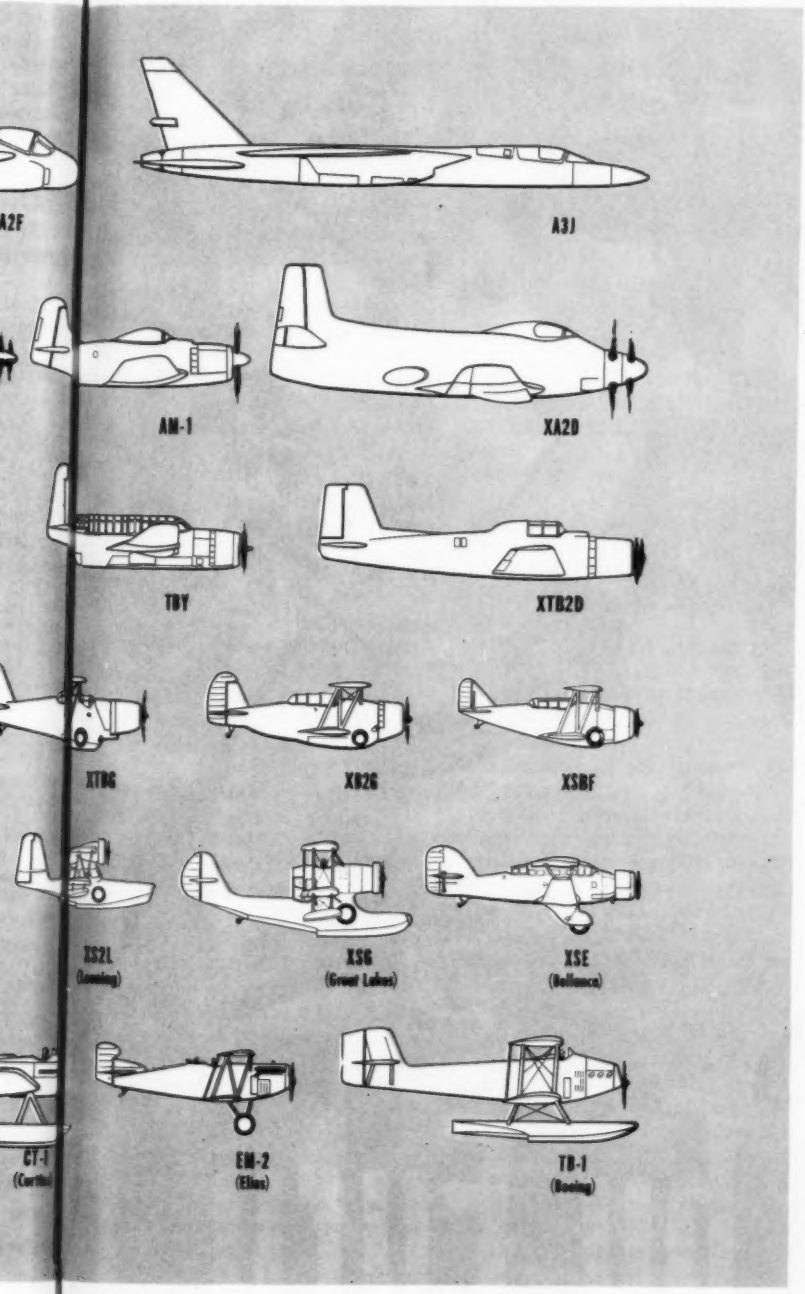
Headmouse

Have you a question? Send it to Headmouse, U.S. Naval Aviation Safety Center, Norfolk 11, Virginia. He'll do his best to help.

DEVELOPMENT OF U.S. NAV



AV ATTACK AIRCRAFT -PART II



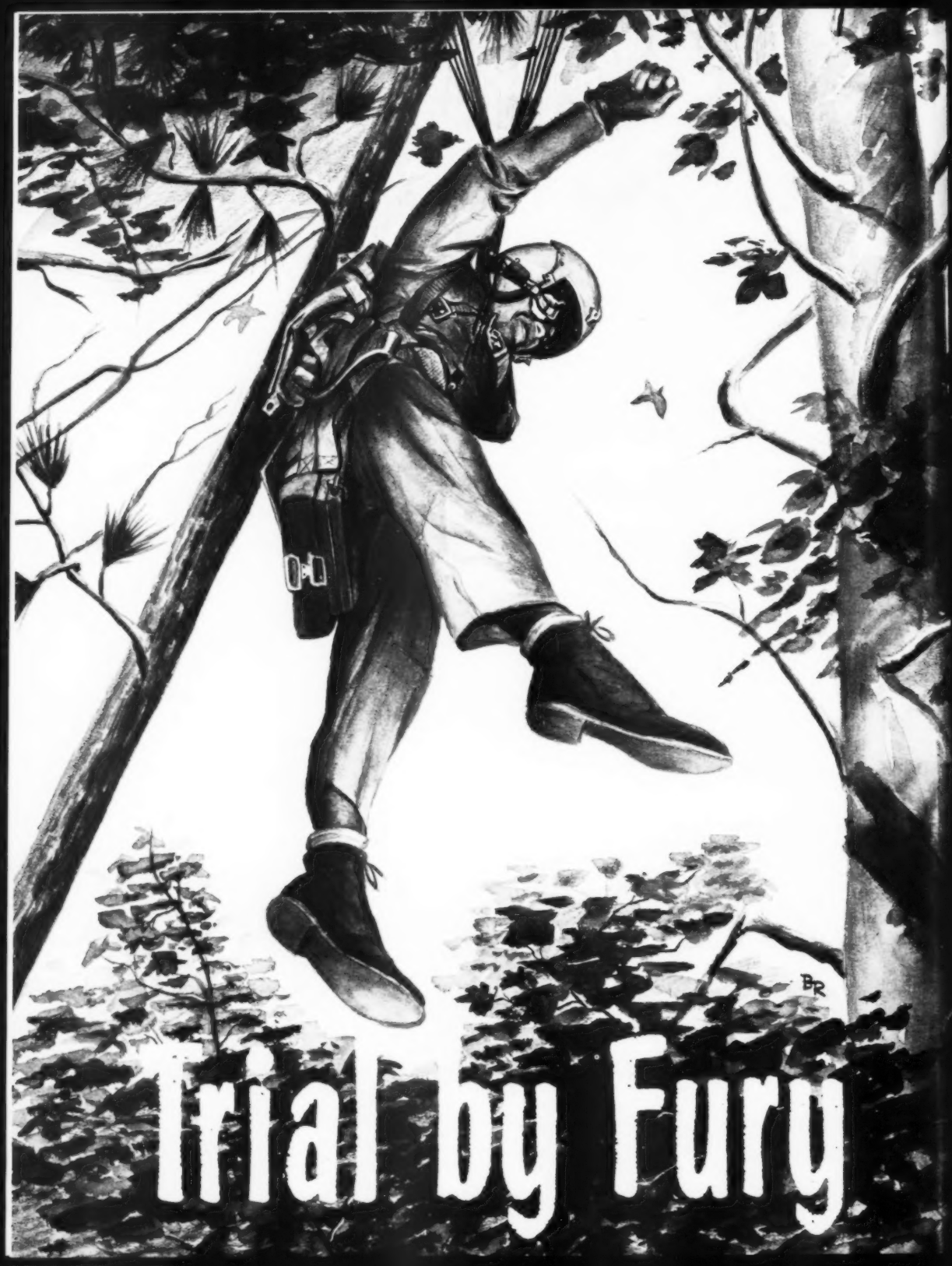
WITH our eyes accustomed to the smooth lines of present day aircraft, a few of these designs appear to be the outlandish doodlings of an apprentice aeronautical engineer, meant only for the drawing board. They were serious explorations, however, and all got into the air—for a little while at least.

The Sperry light bomber featured a triplane design as well as being an amphibian. In the early 30's a desire to find a small combat amphibian produced the XS2L, XSG and Sikorsky XSS-1 (not shown). A truly general purpose concept, they were to incorporate folding wings and tail hook for carrier use. All were dropped after tests since the Jack of all trades is usually the master of none.

Several monoplanes were tested about this time, the XS2C and XSE, but they too were dropped and it was not until after 1937 that the monoplane came into operational use as an attack plane. The BT-1 was one of the type which made this possible.

The fortunes of WW II left many designs as orphans. Both the XSB2D and XTB2D had their first flight in 1943; changing tactics and Pacific victories cancelled need for some as well as for XBTK and XBTC. Trouble delayed operational use of the TBY and it saw no action. Survivors of war-oriented development program were XBTM-1 and XBT2D-1 which became the AM-1 and AD-1. Turbopropped XA2D was an atempt to stretch AD series into jet propulsion with 5100 horsepower plus 850-pound thrust from exhaust ducts. Advertised top speed: 440 knots.

XA2J-1 was another unsuccessful attempt to develop new model from previous one (AJ-1). Advanced A3J design gives Mach 2 speed, long range.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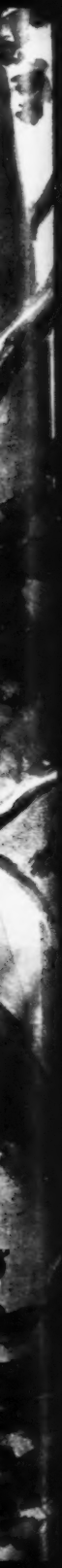


After a midair collision the pilot of the FJ-3 ejected. Overanxious, he manually actuated his parachute at a high altitude and a high velocity. Despite this, he lucked out, his parachute canopy was undamaged and he escaped with only minor injuries.

MY AIRPLANE immediately went out of control and began rolling to the right. I didn't take time to look but I believe the right wing was lost on impact. My first reaction was to abandon the airplane as soon as possible. I reached for the face curtain, then realized my feet were not in position. At this point the airplane was inverted on its first or second roll. I assumed the correct position and ejected. The airplane was inverted but there was no negative G. I would estimate that the acceleration at the instant of ejection was 3-4 G. The ejection sequence was normal. Altitude was 30,000 feet.

The airstream slipped my oxygen mask up off my chin — the bottom of the mask was between my nose and mouth. The chinstrap had been removed from my APH-5 helmet and a Hardman suspension installed. (The chinstrap should be reinstalled on an APH-5 helmet after installation of a Hardman suspension system as recommended by BACSEB 17-58A.) My helmet had a nape strap and spring type earphone modifications.

When free of the seat I pulled the bailout bottle lanyard and replaced my oxygen mask. No oxygen was available. *(Examination of the pilot's bailout oxygen system after the accident revealed it had been actuated and the oxygen supply depleted. O_2 mask hose must be uncoupled from aircraft hose before activating bailout oxygen bottle.)*

By this time I was tumbling violently. Spreading out my arms and legs and tucking them back in had little effect on decreasing the gyrations. Should I risk losing consciousness and depend totally on the automatic parachute deployment aneroid or should I pull the D-ring now and take the chance of anoxia during the descent plus the increased shock of the parachute opening due to altitude.

I believe it was because of the tumbling that I chose to open the parachute manually hoping to recover consciousness in the lower atmosphere. The opening shock was tremendous but it was satisfying to know that the parachute was open. *(Later examination of the barometric opener revealed that it functioned satisfactorily.)*

I removed my helmet and dropped it. The right side of the visor was broken—how, I don't know. It didn't go very far though because one side was still attached to the oxygen mask and the mask was attached to the seat pack by the bailout bottle tube. I retrieved the oxygen mask and again tried the bailout oxygen bottle but to no avail. Any movements at this altitude required tremendous exertion so I dropped the helmet and mask again. The helmet remained suspended about 3 feet below my feet and added somewhat to the oscillations that developed occasionally on the way down. I checked my watch; it was 1035.

The oscillations were fore and aft rather than side to side. Not only did this make it harder to breathe but the acceleration effect caused partial greyout.

Twice I attempted to attain a sitting position in the harness. The first was about 15,000 feet and the second at around 8000 feet. Both attempts were feeble. My back hurt and the effort was exhausting. The chest strap was binding against my throat, the shoulder straps were cutting off the circulation in my arms, and the leg straps were cutting me. To say the least, the descent was uncomfortable.

At about 3000 feet I again retrieved my helmet and put it on. It was obvious that I would land in a heavily wooded area. I checked the direction to the nearest road and crossed my legs for a tree-top landing. I missed a big hickory by inches and the chute hung in its branches. I was suspended about 25 feet off the ground and was swinging about 10 degrees so I was just out of reach of a white oak sapling on one side and a small pine tree on the other. The ground underneath was clear. Before the oscillations subsided I tried to pump the swinging and on the second pump the parachute came loose from the hickory and I landed feet first. For at least three minutes I didn't want to move—just lie there and rest.

I looked at my watch and it was 1055. The leg straps and chest straps were fastened and I rolled slightly so the back pack would support my back. The problem now was how is the easiest way to get up. By rolling over on my stomach and drawing one leg at a time under me I managed to get to my knees and then stand. I removed my gloves, stuffed them in my pocket and left the rest of the gear where it was. It was only 150 feet to a road which was barely passable for an automobile but one came by as soon as I reached it. ●

CHECK OFF LIST

BEFORE beginning his approach, an AD-7 pilot failed to switch to the main fuel tank. He entered the landing pattern still running on his starboard drop-tank. The tank ran dry at approximately the 180° position. The fuel boost pump was on when he then switched to the main fuselage fuel tank. The engine ran smoothly at this time so he continued his approach. When the aircraft was on final near the ramp, the engine began to cut out. It finally caught when the pilot was settling rapidly and turning, causing further rolling into the water.

"It appears the pilot (who has had three West Pac cruises and well over 1,000 hours in the AD) fell into the trap of 'excess familiarity' with the aircraft to the point where he felt he knew it so well that he did not need the check list," the investigating flight surgeon stated in his report. "This was not the first time he got 'caught' not using it. Regardless of the amount of flight time in type the pilot may have, there is no excuse for not using the check off list in any aircraft. This pilot is fortunate that this accident was not fatal."

Bailout Quote

". . . THE ground began to appear to accelerate toward me. A wind drift became apparent. I prepared to hit and roll per the instructions of a P.T. instructor 3½ years ago at Preflight. I had not been informed that the ground would come up that fast but could think of no way to halt the proceedings. I hit down, rolled and got a facefull of the sweetest dirt I ever had the pleasure to come in contact with . . ."

Raft of Trouble

WHILE on a photographic mission off the West Coast, an HUS-1A experienced engine failure and collided with the water. All six occupants escaped uninjured. The helo floated inverted with the tail out of the water, then sank.

The pilot and copilot were wearing PR-2 belt type life rafts. Although the passengers and crewmen had been briefed on the rafts, they used them for seat cushions instead of wearing them. They did not take their rafts out of the helo. After inflating their life vests, the survivors tied the pilot's and copilot's rafts together and hung on to them. With a few minutes they were rescued by a tuna boat working the area.

The accident investigation board recommended that on all over-water flights all personnel in helicopters wear one-man life rafts. "The chances of retrieving rafts unattached to personnel are slight in case a ditching is necessary," the board stated.

"In this accident as in many others with the helicopter rolling on its starboard side it is very difficult if not impossible to remove the Mk-4 life raft," an endorser noted. "A more rigorous policy has been initiated to insure that all personnel in this squadron wear one-man life rafts on all over-water flights."

Flying Fitness Sense

FOR chuckles and information on physical fitness and naval aviation, all pilots and crewmen should read the newest Sense pamphlet: Flying Fitness Sense, NavWeps 00-80Q-53.

Flight Gear Inspection

THE squadron safety officer and the scheduling officer have been directed to coordinate a flight gear inspection of all personnel at the rate of five to seven pilots and crewmen per week.—*AIRFERRON 32, Safety Council Minutes*

HMI Violation

AN AMH1 and his assistant had replaced an RH unit horizontal tail power control package and were attempting to rig the package. On about the fifth readjustment, the hydraulic power was inadvertently left on. When the AMH1 disconnected the follow up rod, the horizontal tail slab ran to full leading edge down pinning the mech's hand in the package compartment. He suffered a severe compound fracture of the right wrist.

The cause of the accident was failure to follow the correct synchronizing procedure and to heed the caution note in the HMI on high speed bottoming of the power cylinder. A secondary cause factor was the attempt to rig the installed package in violation of the HMI.

Bungee Ricochet

DURING routine maintenance of an A4D-1, the ejection seat was disarmed and the "old type" canopy air bungee deflated. When maintenance was completed, the aircraft was towed outside the hangar for engine calibration. The air bungee was charged with 2500 psi so that the canopy would remain open for the ground check. The aircraft was then returned to the hanger for correction of minor discrepancies. When these had been repaired, an AN was dispatched from the ejection seat shop to arm the seat.

Contrary to squadron doctrine, he did not deflate the air bungee before arming the seat. The cable which operates the bungee looked tight to him. Kneeling on the seat and facing aft, he took hold of the cable to check the slack and fired the bungee. The bungee piston rod broke and the bungee inner cylinder ricocheted in the cockpit and struck the AN on the forehead and right hand.

"At the time of the accident, the ejection seat was positioned in the full up position," the safety officer's report stated. "With the seat in this position, the bungee cable does not normally appear to have any slack. Investigation revealed that when the accident took place shortly before secure, the airman was not giving his entire attention and thought to the somewhat hazardous job of arming an ejection seat."

Steel-Toed Boot

AS the pilot of an A4D-2 ejected, his right boot scraped on the forward cockpit, peeling back the leather and pulling the steel plate out of the toe. After successful parachute descent, the pilot landed in the desert without injury and was picked up by SAR helicopter. The toe plate of the boot was found in the aircraft wreckage.

Face Saver

JUST before reaching the target on a practice run, an A4D-2 struck a ½" steel cable. The pilot climbed to 5000 feet and notified his chase pilot that he had struck something. The impact had broken the vertical stabilizer, smashed the canopy plexiglas and damaged the radio antenna. The pilot returned to base and landed.

The reporting flight surgeon stated that a fragment was broken off the pilot's helmet visor guard and there were many scratches on the visor. The fact that his visor was down saved his face from multiple cuts.

Helo Downwash

ALL units should train their personnel to breathe through the nose when in the water in the downwash of a helicopter rather than through the mouth. Much less water will be ingested.—*Atlantic SAR Bulletin 11-61*

Drogue Fires

AN AME3 and an AN were arming the Martin-Baker ejection seat in an F4D-1 on a hangar deck of a carrier. As the AN tried to insert the safety pin, he struck the locking plunger inside the safety lock hole with the pin, causing the drogue gun to actuate. Both men heard the escapement mechanism start to actuate and tried to get out of the way. The withdrawal line was not attached and the canopy had been removed. When the gun fired, the projectile was propelled up and through the flight deck, over the fantail and into the water. Black gun powder sprayed into the AME's face and eyes. Result: sick list for 10 days.

This accident and injury were caused by a failure to follow proper maintenance procedure. The next individuals may not be so lucky! ●

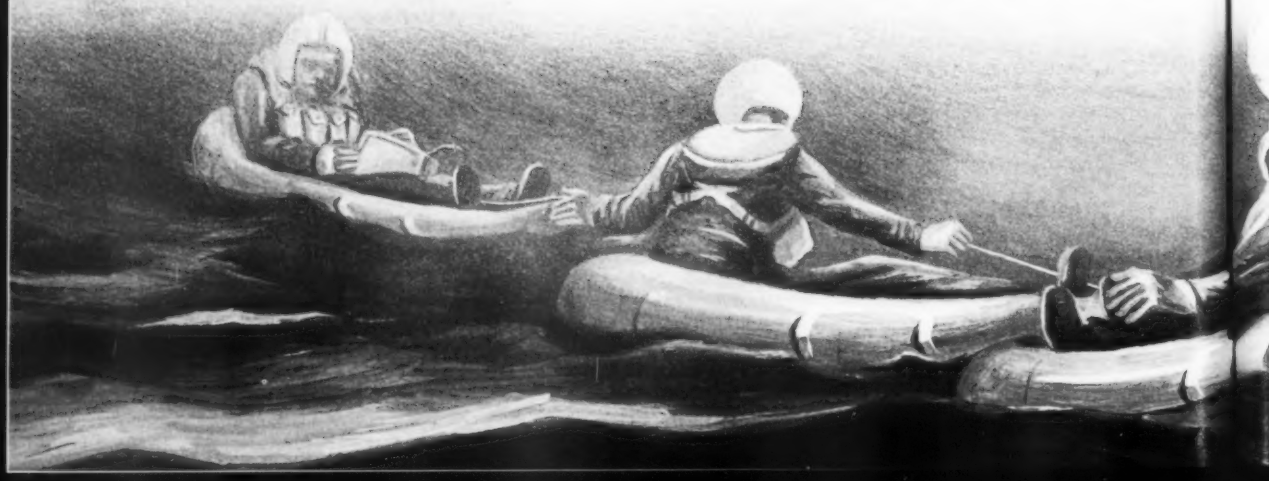
OVER AND OUT!

A LOW fog bank was moving in and out over the coast the morning of our scheduled overwater fam flight in an HSS-1N.

Until midmorning when the weather cleared somewhat, the field was intermittently IFR. At 1040 the field went VFR for all aircraft. I reviewed the past yellow sheets and maintenance gave me the word that the throttle had just been rerigged to remedy a low idle discrepancy. On turn-up the idle checked satisfactorily. Take off and climbout to 1000 feet were normal and we headed seaward. I was in the port seat; LTJG X, the student pilot, was in the starboard seat. We had one sonar crewman aboard.

The fog bank extended some 15 miles to the west, up to 300 feet. I instructed LTJG X to climb to 2000 feet to see if it was clear enough further west to work at low altitude. About this time we reviewed ditching procedures. Sixteen miles out we began a standard rate descent at approximately 26 inches manifold pressure and 2500 rpm. Takeoff plus 25, I informed the tower that we would be working approximately 16 miles west in VFR conditions.

We had descended 300 to 400 feet at 85 knots airspeed when I felt the aircraft shudder slightly. All the instruments read normal and the chip detector light was out. Both LTJG X and I felt a definite high frequency vibration in the aircraft although the engine sounded normal. As we continued our descent, we heard a continuous muffled detonation. I looked out the port side of the aircraft and saw a fluctuating orange flame at the exhaust stack. The crewman saw a puff of black smoke go by the port cabin window. By now the engine was running extremely rough with muffled backfiring. As I took over the controls, I observed that the tachometer needles were splitting and



reengaging. I told the crewman to stand by to ditch.

The tower rogered my Mayday and told me to squawk Emergency on our IFF which we did. About this time the needles split again and I felt the loss of the aux servo system and ASE. There was a heavy vibration and the engine quit, refired for an instant and then quit for good. The engine instruments and chip detector warning light were still normal. We were at approximately 800 feet altitude at this time in an autorotative descent at 65 knots airspeed.

At 300 feet, I secured the mixture and turned the MAG switch off. LTJG X turned off the fuel valve. I called the tower and gave our position as 18 miles west of the field (Tacan reading). I realize now we would have been better off for rescue if I had given them a more exact position. At 60 feet I started a flare and entered the water in a flat attitude with no forward airspeed. We had plenty of RPM to cushion the landing.

The helicopter entered the water upright. LTJG X applied the rotor brake and I applied full left cyclic. The helo rotated to the left and the rotor blades stopped intact just about the time they hit the water. LTJG X exited out the starboard pilot's hatch and I followed. Water pouring in through my open hatch helped propel me out the hatch on his side. The helo continued to roll to the left to an inverted position as we swam clear. I felt some part of the aircraft brush against me as it continued to sink nose down and inverted. Within 20 seconds it was gone.

I saw the crewman in the water about 10 yards beyond where the helo sank; he signaled to us that he was OK. Later he said he had unstrapped right after the helicopter settled in the water and had started aft to pick up the first aid and pyro kits. When the plane rolled to the right, then fell left, it threw him against the bulkhead with water over his head. He left the kits and went out the main starboard hatch. To find his way out he used the nylon orientation strap which is attached to the overhead above the sonar seats to a point centered over the main cabin hatch and on to a point over the forward port emergency escape hatch. The accident investigators later recommended frequent briefing that all helicopter crewmen should remain strapped until the rotor blades stop. The shock of the blades striking the water can throw a man off balance injuring him or disorganizing him so that he may be trapped inside the sinking aircraft.

Once clear of the aircraft, I inflated my life vest and unbuckled my life raft, a modified belt type raft container. I had no difficulty inflating my raft and climbing aboard. LTJG X easily inflated his raft but the crewman's raft had to be inflated orally because the CO_2 toggle switch would not work. We tied our rafts together and then readied our signal equipment. Just after getting into our rafts we saw an aircraft and set off an orange smoke flare. The investigators later thought there was a strong possibility that the pilot was not listening to guard frequency. He didn't see us.

After another 15 minutes we saw a P2V and set off another daysmoke signal and used a signal mirror. He made a low pass over us indicating he had us in sight. Other aircraft appeared on the scene and a few minutes later three helicopters came and picked us up using the rescue seat. All three of us wore our helmets when being hoisted.

All our survival gear worked as designed except the crewman's raft. Although wearing a raft while flying helicopters may seem cumbersome and awkward at times, it certainly is a comfortable feeling to be able to crawl into your raft once you're in the water. And I highly recommend wearing your helmet when being hoisted. It cuts down on rotor wash blast when you're approaching the underside of the helicopter. I might close by saying that continuous practice of the ditching bill in this squadron definitely made the autorotation and ditching just another maneuver. ●

SKULL TUB TESTIMONIAL

Your helmet is one of the most valuable pieces of personal equipment that you as a pilot or aircrewman have. Don't abuse it by banging it around and swinging it by the nape strap or chinstrap. Take care of it and wear it properly. You never can tell when your headbone is going to need all the protection your helmet can give it.

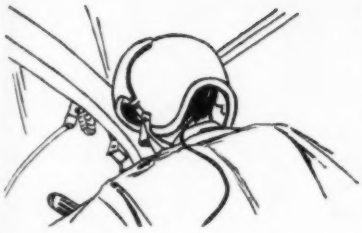
Here are six instances of helmet protection which occurred in the past six months:

Canopy Implosion: An F8U-1P was climbing through 35,000 feet in afterburner when the canopy failed. Fragments of plexiglas broke the pilot's helmet visor and scratched his face. His oxygen mask was hit with enough force to loosen both inhalation valve frost covers.

He made a normal landing.

Battering Ram: When an HUS-1 settled after an attempted waveoff in mountainous territory the main rotor blade struck a tall tree and disintegrated. The helo plummeted nose-down through the rest of the trees, struck the ground inverted and burst into flames.

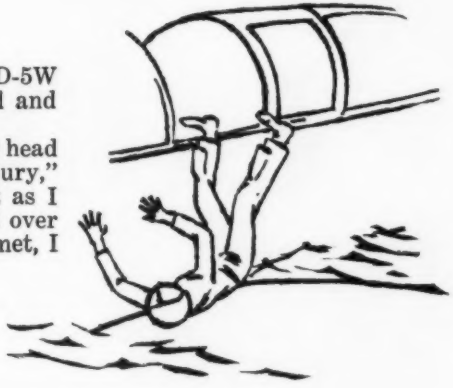
The pilot was momentarily knocked unconscious. Recovering, he unfastened his seat belt, dropped to the overhead and attempted to open his side exit hatch which had slammed shut on impact. Although he released the emergency release, he was unable to open it. At this point, using his APH-5 helmet as protection, he butted the hatch until it finally popped open or out. He escaped just before the plane exploded.

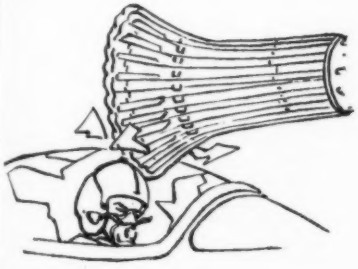


Practice Landing: On the seventh practice landing, a HUP-2 skidded, the right main gear dragging the turf. Vibrating severely, the aircraft rolled violently onto its right side. The copilot's inertia reel was unlocked. As his head struck the cross member of the side window, his APH-5 helmet absorbed most of the force. He was pulled unconscious from the wreckage. If it hadn't been for his helmet, his head injury would have been more serious, possibly fatal.

Cat Shot Ditching: When the tension ring broke as the AD-5W was fired off the cat, the aircraft swerved, straightened and then went over the side.

"As the plane entered the water I felt something hit my head but because of my helmet whatever it was caused no injury," the pilot reported. "I unstrapped without difficulty but as I was standing up to get out of the plane, I was knocked over on my head on the wing. Once again, thanks to my helmet, I suffered no injury."





Canopy Shattered: On a scheduled air-refueling flight a pair of F8U-1s rendezvoused with the A4D tanker at 20,000′ and 240 knots. The probe of one of the F8Us hooked the bottom of the drogue. As the F8U continued to move forward, the drogue whipped, shattered the canopy and hit the pilot on the head. The pilot was slightly dazed but was otherwise uninjured and returned to base without further difficulty.

Emergency Landing: A proficiency pilot landed a T28-B gear-up near the runway when the engine failed shortly after take off. On ground impact, the dual pilot's head struck the port side of the sliding portion of the canopy. On recoil he struck the plexiglas dome. Although his helmet visor housing was broken, he received only a few cuts on his chin and the tip of his nose.

"The experience of others is the cheapest experience we buy."—Anon.

QUALITY CONTROL

INSPECTION is the oldest vocation known to man. This little-known and completely useless bit of information is supported by the fact that Adam is known to have inspected the apple before taking that crucial bite. Possibly the results of this early inspection are partly responsible for two schools of thought often encountered. One such school likes to define inspection as a necessary evil; the other insists on deleting the word "necessary."

Fortunately, thanks to an evolution process of sorts, many an inspector has gained considerable prestige during the past decade. Formerly known to many as "that *?!%*½s inspector," he now finds himself referred to with greater esteem as "that *?!%*½s quality control type."

The Quality Control (QC) man is often misunderstood, not only by his wife, but by others as well. Much of this misunderstanding stems from the fact that, sadly enough, many people are not quite sure just what-in-the-world quality control is. Often some hapless individual, after mentioning that he is in QC, will be asked "What's that?" or, in some cases, be advised to seek honest employment.

Some of the difficulty is occasioned by popular misconceptions of the words "quality" and "control." The word "quality," to many, suggests superficial characteristics, such as the appearance of a paint job; the word "control" is likely to produce thoughts of drastic law enforcement. Where this sort of word-association exists, the term "quality control" can inspire visions of Fearless Fosdick-type cops, shooting citizens for scratching the paint.

In real life, of course, QC people seldom shoot anyone, and even when they do, they sometimes miss. A quality item—be it aircraft, missile or any part thereof, is: (1) safe, (2) functional, (3) reliable.

In this age of great technological complexity and perplexity, a multitude of exacting specifications are required to make any weapon system a reality. The quality of a system will be assured only if each unit within it is fabricated—installed—operated—maintained, in accordance with applicable blue-prints, TOs or other governing data; the degree of conformance to these specifications will determine whether the quality is "good" or "bad"—whether the unit will or will not perform **consistently** the function for which it was intended.

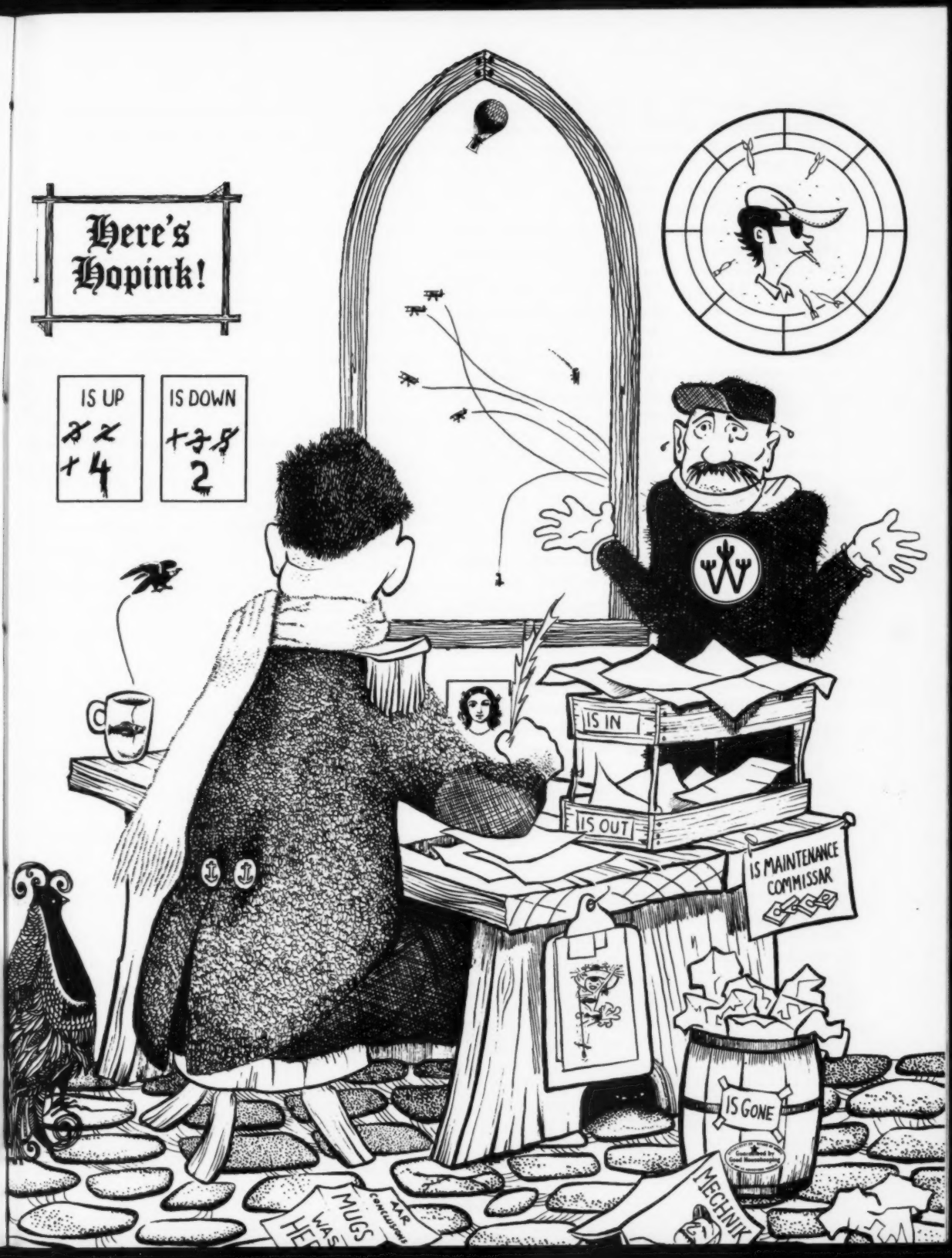
True "control" of quality can be achieved only by the cooperative efforts of one and all. Any person can jeopardize control if the task he performs has any effect on quality. What task doesn't?

Vicious rumors have been circulated from time to

by W.M. Murphy

General Dynamics/Convair

Reprinted from Aerospace Accident and Maintenance Review


Here's Hopink!
IS UP
IS DOWN
IS IN
IS OUT
IS MAINTENANCE COMMISSAR
IS GONE
MECHNIK

time to the effect that the life of a QC man is just one big, long coffee break. This is not true. Rather, it is a series of very short coffee breaks, interspersed with long periods of constructive activity. During these periods of activity he attempts to fulfill the objectives of Quality Control

Back in the dear dead days beyond recall, quality was an accessory after the fact, so to speak. Something would be built, overhauled, or maintained, and some *?!%*½s inspector would come around to survey the results. By this time, of course, the quality (good or bad) was already an established fact. If it happened to be bad, a few pleasantries were usually exchanged between the inspector and other parties, followed by a compounding of the felony through various combinations of rework, repair, patching-up and boondoggling. A decision was reached somewhere along the line that it might be preferable to paddle upstream with the quality canoe. Today, the primary objective of QC is to assure that the maintenance of a satisfactory quality level becomes an integral part of the task. Efforts to obtain this objective may be termed as "preventive action." The idea is to prevent trouble before it starts.

The best-laid plans of mice, men and even a few women, often go astray. For this reason a little substandard quality sometimes sneaks into the act. When this occurs an attempt is made to prevent the intruder from making a repeat performance. In QC circles this is known as "corrective action." To the layman it is sometimes known as "meddling."

To provide a basis for preventive and corrective action, it is necessary to use some form of quality evaluation. There are at least two possible approaches. One method, known as the "Here's hopink" system, was pioneered by the Royal Slobbovian Air Force in the early days of aviation. This system was very simple and involved no paper-work at all—each ground crewman just sort of made up his own overhaul and maintenance procedures as he went along. Whenever a RSAF pilot heard a rumor that a plane was ready to fly, he would climb aboard, say, "Vel, here's hopink," and go roaring off into the wild blue. This system was used only a short time before an alert engineering officer happened to notice that, while many aircraft were taking off each morning, only a few were returning in the afternoons. The Slobbovian brass, after studying this disturbing trend for a few weeks, realized—in a blinding flash of intuitive perception—that it was an indication of poor quality.

Another method of quality evaluation consists of making inspections (according to certain specified procedures) at strategic intervals during manufacturing, overhaul and maintenance operations. This method is applied to almost all activities in the Aerospace realm, and is considered vastly superior to the "here's hopink" system. It is, among other things, more economical.

A quality control system has no justification for its existence unless it results in a net savings. Savings can be in terms of life, time or money, and is often a combination of all three. The quality of our national defense, as a whole, is dependent upon the quality (safety—function—reliability) of its parts. It is not inconceivable that an adequate quality control system for these parts could, some day, save our entire nation.

It would, of course, be ridiculous to assume that the QC specialist can create such a system alone. He is only one small factor in the quality equation. If we view the overall operation as a chemical solution, then QC may be considered a catalytic agent, introduced to precipitate good quality. Quite a few methods have been developed over the years to accomplish the desired reaction—some have proven more effective than others.

One of the less favorable methods was introduced by a former advertising man, let's call him "Fats" Bacon, a quality control inspector assigned to a secret missile complex in down town Los Angeles. Bacon was a good egg, but he couldn't forget his former training. He would go to almost any length to get publicity; in fact, Bacon was something of a ham, and liked to dramatize the discrepancies he found. He preferred a large audience.

One day, in the Wilshire Blvd silo, a big bird was nearing the final stages of countdown. Bacon entered the control room, smiled at the multitude, and bowed from the waist. He then remarked, in a casual, offhand manner, that it might be best to forget the whole thing. The LO_2 storage cells, it seemed, had been inadvertently filled with beer from a nearby brewery —a fact that Bacon had known for three days. Before departing on his one-way trip to the moon, Bacon demonstrated the principles formulating the "First Law of Commotion." The law states:

The effectiveness of quality control is always in inverse proportion to unnecessary commotion.

Convair, among others, has always favored "uncommotional QC" over Bacon's "publicity approach." Efforts to eliminate needless commotion and wheel-spinning have led QC into many formerly foreign

fields of specialization. Today the QC program is estimated and planned in advance. Procedures are established; personnel trained; equipment procured. Facilities are made ready for ultrasonic, radiographic, magnetic, penetran and X-ray inspections. And for precision measurements of every description; for chemical and metallurgical analysis; for electronics inspection and test. All this, and much more, must be fitted and tailored to the task at hand.

The program must be developed and engineered. QC activities should not be a series of dams in the river of progress. They should blend smoothly with the larger activity. Dam activity (pardon the expression), if necessary, must be confined insofar as possible to the headwaters. Inspection, tests, failure analysis and corrective action procedures are designed to exclude contaminants . . . to minimize troublesome filtering of the downstream torrents . . . to speed, not impede, the flow.

The program must be maintained, evaluated and improved. Procedures are audited, reviewed, revised. Statistical methods are employed to detect and eliminate problems; to prevent delay and wasted effort; to space and place activities for maximum effectiveness. Advanced techniques and new developments are explored, tried and applied. There is always room for improvement. Quality Control's work, like woman's is never completely done.

Some great sage once observed that, "When all is said and done—more has usually been said than done." An interesting experiment called "prohibition" proved that, while you can lead a man to water, you can't always make him drink it. Even the best procedures have little value if they are not accepted and followed. In our day of system sophistication and specialization of skills, no QC person can hope to acquire an intimate knowledge of every task. The best inspection is no substitute for quality, "built-in" by the assembler, the mechanic, the technician—the man who does the job—he is far and away the most important QC man of them all.

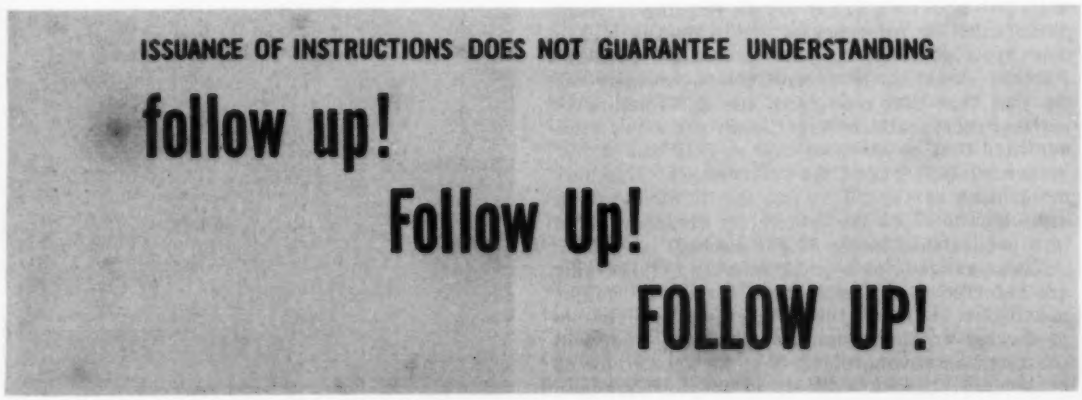
It is a wonderful thing when each man on a job knows what he is doing. It is even more wonderful when he also knows what the others are doing. There is an old saying that, "What you don't know won't hurt you." It ain't necessarily so.

Consider the case of an early-day aviator, who used to fly an old open-cockpit job by the seat of his pants. One day he flew through a dense fog. He didn't know that he had forgotten to put on his pants that morning. He didn't know that he was flying upside down. He didn't know that his safety belt was unfastened. And he didn't know that he was over a huge cactus patch. Yet all these things hurt him.

Perhaps more truth lies in another old saying: "It's the little things that count." A little job, not done, can cause a big disaster—and a little communication to the next man can prevent it. A little piece of loose hardware in some critical area has made big trouble for many a flight crew. A little extra care by each person makes a big, big difference in quality.

There is no glory in QC. The man who thinks a little harder—the man who does his job a little better—will never see the headlines proclaiming: **"Joe Blow improves quality—prevents big disaster!"** That's QC biz. In general, the less you hear about it, the better it is doing.

"Quality is everybody's business"; therefore, quality control is everybody's business. Who needs it? That's up to you. On your job . . . *you are it.*



The job's not over 'til the paperwork's done!

We have come a long way from the times when work accomplished on aircraft was obvious by the presence of new parts or a fresh patch—with this new stuff the only evidence is absence of squawks and the story you put in the log book—we gotta "document" our accomplishments, otherwise helpful history is missing.

HOW many times have you, as a pilot, come down from a hop and failed to list a discrepancy on the yellow sheet, because you found it listed on previous yellow sheets and nothing done to correct same? How many times, as a mech or technician, have you signed off a discrepancy as "ground checked OK" without indicating, to some measure, the steps taken to determine that it did check out satisfactorily on the ground? Both of these practices are frowned upon, since they represent the paragon of what *not* to do in the better circles of professional pilot techniques and maintenance practices. Yet, we would hazard a wager of one buck to a five yen piece—with hole—that one or both of these nonprofessional habits occur in your squadron today!

The yellow sheet, properly used, represents an invaluable piece of paper. If not properly used, they become just another piece of paper.

As an example, we heard, by way of the refreshment stand at the club, mumblings from pilots of one squadron that we should send a Tech Rep to find out what is wrong with the angle-of-attack system. A call to the squadron maintenance folks, to determine if we might be of assistance, brought the snarling retort, "They are *all* working!" This along with the inference of, "Why in the H---- don't you go back to your crossword puzzle!" Further checks, with several pilots, brought out the fact that they considered the units non-operative or inaccurate; however, each and every pilot admitted that he accepted this as SOP and didn't bother to squawk it on the yellow sheet. Furthermore, none of the pilots had the faintest notion as to how to check the system for accuracy. This info is furnished in the Flight Manual.

These gadgets, as a great number of pilot aids are referred to, are not there for added weight nor ballast, but for the pilot's benefit. This is predicated on the assumption that the pilot will use them as recommended, that he knows how to determine if they are operating within tolerances, and last but not, repeat not, least, takes the time to write them up clearly and concisely when they are not working. After pursuing this course, the pilot should faithfully review the yellow sheets and refuse to accept "Ground Check OK" as a fix for discrepancies. He, along with the maintenance chief, should reiterate disapproval with a number 12 in the posterior if the practice continues.—*1st MAW "Wing Tips"*

Foreign Object Damage Control

A safety officer reports on a program which has reduced engine damage in the past three months from an average of 11 engines per month for his unit to zero. *Tire condemnation rate* has been reduced, as well. The program calls for the assignment of an officer as foreign object damage officer. Among his duties are educating maintenance supervisors, checking each of the supervisors' efforts, periodically and making a daily check of runways, taxiways, aprons and hard stands.

—Interceptor

Typhoon Spotting

THREE ADs spotted on the fantail of the carrier BON HOMME RICHARD, were damaged by forces of 60-knot winds and 25-foot waves during 20 hours of very hard rolling and pitching in Typhoon Nancy. The rolling and pitching of the ship caused severe forces breaking and bending tiedown rings on both wing butts and landing gear.

Before the ship entered the typhoon area the following was accomplished:

Maximum number of aircraft possible spotted on Hangar Deck.

Safety lines strung between aircraft and along Flight Deck.

Blast reflectors raised.

Extra heavy-duty tiedowns placed at Flight Deck Control.

Oleos bled and chocks tied down on all AD aircraft.

The accident board recommended that all aircraft be spotted as close to the ship centerline as possible, facing forward and in one solid pack extending aft from abreast Flight Deck Control.

Advantages of such a spot:

- gives the ship better balance;
- integrity watches would be exposed to less danger;
- the island would protect some of the pack from starboard;
- deck edges would offer some protection to the pack.

Reviewing authorities concurred in these recommendations provided space is available.

The report noted that although the ship was subjected to very severe sea conditions at the time, damage was minimized by the constant vigilance of integrity watch personnel and sound pre-storm preparation.

Explosion of Modified Ammo

RECENT accidental explosion of an Army bounding type land mine at a shipyard resulted in serious injuries to three enlisted personnel. The item which exploded with unusual violence had been modified locally by increasing its explosive charge, with intent to improve the weapon's performance.

Report of the incident states: "An over amount of powder was used by a military training instructor highly trained in use of explosives in an attempt to improve the igniting system." This implies a tacit approval of such experimental activity by the commanding officers.

BuWeps and the Chief of Naval Operations require that the modification of ammunition for any purpose at U. S. Navy managed activities be conducted only at a BuWeps-approved activity, properly equipped, as well as by qualified personnel. BuWeps did not approve the activity which resulted in the explosion accident.

While the type of accident just briefed is infrequent, such accidents involving modified ammunition have occurred in the past, and resultant casualties have even included spectators in public demonstrations.

Attention is invited to OpNav Manual 34P1, Paragraph 20102.11: *"Altering Ammunition.* Ammunition shall not be altered, nor shall fuzes or any other parts be removed or disassembled without explicit instructions from the Bureau of Ordnance." The Bureau of Ordnance has been merged into the Bureau of Naval Weapons; however, pending such revision of OpNav Manual 34P1, the quoted regulation remains in full effect for all U. S. Navy personnel.—*NavWeps Bul 3-61*

R4D Selector Valves

TWO R4D aircraft commanders recently departed this home base on a night VFR logistics flight to a nearby Air Force base. After landing and changing seats the pre-takeoff procedure was completed and a normal takeoff was made. Shortly after becoming airborne the starboard engine failed, followed shortly thereafter by failure of the port engine. Both engines started to run intermittently, surging alternately to an overspeed condition and then cutting out. There was insufficient power to return to the field and a forced landing was made, wheels down, in a nearby dry lake bed.

Subsequent investigation revealed that an empty outer wing tank had been selected, thereby admitting air into the fuel system. The outer wing tank selector valves turn very readily and are located toward the base of the center console in such a position that they can easily be kicked. The valve

was probably kicked out of the "OFF" position when the pilots changed seats.

The flight manual for the R4D-8 states that the outer wing tank selector valves will be in the "OFF" position for *all* takeoffs and landings. This applies regardless of the quantity of fuel in the tanks and is especially applicable when the tanks are empty. The check-off list for the R4D-8 should be revised accordingly to remind pilots that the outer wing tank selector valves must be "OFF" for every takeoff and landing.

Why?

A FATAL accident occurred after takeoff from a touch-and-go landing. After a normal lift-off the aircraft assumed a nose-high attitude. The nose-high attitude increased until the aircraft stalled, at about 150′ altitude dropping off on the left wing.

Investigation revealed that the down elevator cable was not connected.

The cable eye had apparently not been connected properly during maintenance when the cable was disconnected.

Prevent a Crunch

Swept-Back Wingtips

Despite precautions, damage to the wingtips of jet aircraft continues to occur during towing operation or while taxiing. Some of these incidents may result from not fully understanding the differences of the path followed by the wingtip of a swept-wing while in a turn *vs.* that of a straight-wing during a similar manuever.

With older, relatively straight-wing airplanes, as the nose wheel started the turn the wingtip simply swung toward the turn and followed a path roughly tangent to the wingtap path immediately prior to the beginning of the turn.

Landing gear geometry and the sweepback of jetliner wings result in an entirely different wingtip path during a turn. As a turn is commenced, with a swept-wing aircraft, the wingtip gradually swings out as it moves forward in the early part of a turn. The tip may move out as much as 5 feet (depending on the rate of turn, sweepback and wing spread) and progress 65 feet forward before it again cuts inside of the extended line of the wingtip path prior to the beginning of the turn.

Therefore, it should be kept in mind that the wingtip of swept-wing aircraft moves opposite to the direction of turn through a ¼ moon-shaped area (roughly 5 feet by 65 feet) during transition from the straight ahead motion to a curved path. In view of this, allowance should be made for the outward movement of the wing in addition to the normal margin of obstruction clearance.

Ground signaling personnel should be given special instruction on this program.—*TWA Flite Facts*

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Quality at Work

IT HAS once been said that "playing a piano by ear may sound nice after a fashion, but it's not very professional." Too often maintenance personnel are "playing by ear."

It is recognized that an individual's judgment plays a large part in trouble-shooting, what component must be changed, and what adjustments must be made. Aircraft require that the installation of components, adjustments, inspections and functional testing be accomplished with the greatest of care and exactness.

Aircraft require the professional approach from the pilot to the lowest man on the hangar deck. Take the time to look it up in the Handbook of Maintenance Instructions and Directives. Be a professional, "don't play by ear."—VAW-12

Plastic Gages Taboo

THE USE of plastic fuel measurement sticks is prohibited and applies to all model aircraft. The reason—possibility of explosion caused by electricity discharge.

It is recommended that operators fabricate interim fuel measurement sticks from wood compatible with the fuel involved. For assistance or advice contact your BuWepsFltReadReps.

Qualify Air Group Maintenance Officers

Carrier Air Group EIGHT reports it has instituted a program of indoctrinating and qualifying Squadron Maintenance Officers as Air Group Maintenance Officer.

This program consists of two phases. The first phase involves an instruction period during which the Squadron Maintenance Officer is under the direct supervision of the Air Group Maintenance Officer in Maintenance Control (Flight Deck Control). The second phase consists of the Squadron Maintenance Officer acting independently as Air Group Maintenance Officer on a watch basis.

When a Maintenance Officer of a squadron has completed both phases of Air Group Maintenance training and is designated qualified as Air Group Maintenance Officer, this qualification is made a part of the officer's permanent record.

Who Should Have Caught It

SOMETIMES things happen in peculiar ways Sometimes things happen that shouldn't have happened at all; and sometimes by taking a real, real close look at what happened we can prevent things from happening that we don't want to happen. Take the recent case of a *T-Bird* losing elevator control.

The mission was local IFR. The pilot reported over the penetration fix and was cleared to hold for 20 minutes at 20,000 feet. Four minutes later the aircraft was observed to fly down the runway at 1000 feet, enter a climb, fall out, and contact the ground inverted. Fire followed and the two pilots aboard didn't get out.

By some real top-drawer sleuthing the accident investigation board found that a bushing (part no. 175554) installed in the push rod connecting both sticks to the elevators had worn enough to permit the rod to become disconnected from the sticks.

The immediate reaction to any accident is "why did it happen"?

In this case it appears that the bushing wore out as the result of normal wear and tear induced by movements of the controls to fly the airplane.

The next question that can't help but be asked is, "If it took 2223 hours to wear this bushing to the point of failure, why didn't somebody catch it during the process?"

The bird was a model which saw at least six year service. This would mean innumerable local inspections and at least one overhaul. Peculiar indeed that somebody didn't catch it in the process. Maybe this points to a deficiency in our inspection system. Of the eight other aircraft inspected at the same base one was found to be deficient.

How many others may be flying with this particular bushing worn dangerously thin? This is a bushing; how about other moving parts that don't "meet the eye" during daily preflights or scheduled maintenance? Is anybody checking these for wear?

Is anybody really shaking *your* birds down and really giving them a good looking over once in awhile? This is where you as an FSO can function. By passing the word along and keeping a constant check on maintenance and inspection procedures, accidents like this can be prevented. If somebody had just looked at this bushing *before* the accident there wouldn't have been an accident to look at later on.—*USAF Safety Officers Kit*

No 'Routine' Maintenance On Aircraft or Missiles

WHEN a worker becomes thoroughly familiar with his job, regardless of its complexity and significance, he may tend to lose some of the caution and precision with which he first approached it. Hence, the experienced maintenance man, good at his job and almost always right, may tend to rely too much on his memory instead of using checklists and other aids. Or he may, because it has become fairly routine, try to do a job too quickly to give it the full attention it deserves. He can thus slip up on an important detail and inadvertently become the causative factor in an accident.

Keeping out of the workshop unintentional neglect due to familiarity is an important job of the maintenance supervisor. From his overall vantage point he should be able to see when laxness may be creeping in and so take action to eliminate it. He must insist that all personnel—regardless of experience—use current checklists and handbooks, particularly when the job is important and involves a variety of complicated actions. If his men lack the type or degree of qualification required to turn out a tip-top maintenance job, he should arrange for appropriate training.

The need for command and supervisory stress in this area is borne out by recent missile accident reports which reveal that the weapons were damaged during or immediately after maintenance. In addition to monetary loss, there is more significant potential of death and injury to workers and other individuals, and loss of mission effectiveness. Maintenance is intended to preserve; don't let it contribute to accidents instead.—*TIG "Brief"*

Heat-sink Prevents Component Damage

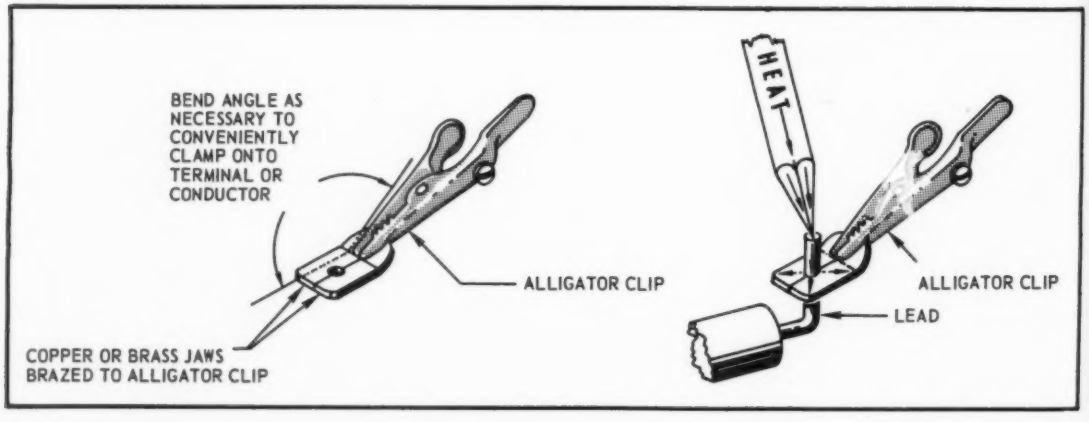
SOLDERING of electronic components can be a tricky operation, and hard-to-detect damage may be done to adjacent circuits if proper precautions are not exercised.

There are many phases of correct soldering, only one of which will be considered in this article. This entails the use of a heat-sink to prevent damaging conduction of heat to solder-joints, resistors, capacitors and other parts.

Heat applied to a joint about to be soldered does not, unfortunately, remain concentrated at the joint but begins to spread throughout the circuit, via the electrical conductors. The temperature may be high enough to begin melting the solder at other joints.

A heat-sink, attached near the point where heat is being applied, will act as a reservoir for excess heat, shunting it away from the easily-damaged circuit components.

Illustrated is one type of heat-sink. It can be easily made from an alligator clip by attaching pieces of brass or copper as shown. Heat flows easily into these pieces and is quickly radiated to prevent damage.—*GE Jet Service News*



A report from a yellow equipment operator:

MUGS

After scaring himself and others, MUGS tells his story of how it happened.

AT about 2100 one night I was directed to secure all aircraft parked on the line. My buddy and I boarded an airstart tow tractor loaded with tie-downs. I dropped my buddy off at one end of the line and proceeded to the other end to work towards the middle. After tying down two planes I started the tractor to move on. I don't know what was on my mind at the moment but it wasn't on what it should have been —the brakes were ON and as I reached the third plane I heard shouts of "FIRE! FIRE!"

The emergency brakes had gotten red hot and ignited crud, grease and oil in the area of the brake shoes. The fire was extinguished with a fire bottle carried on the tractor by an alert sailor who *had* his mind on what he was doing—my buddy.

The tractor's gas tank is directly over the rear axle and further, being right next to planes loaded with fuel this could have gotten a real blaze going.

I recommend to all yellow equipment operators:

(1) When setting the emergency brake, set it tight so the equipment can't be moved until the brake is released.

(2) Insure the brakes are in good working order and free of grease, oil and crud.

LETTERS TO APPROACH

Litter Rescue from P2V

NAS Brunswick—The crash and rescue division and the aviation safety officer of this air station recently conducted experiments in removing simulated badly injured men from P2V aircraft.

For years, field ambulances which responded to crashes and emergencies at this air station were equipped with only rigid pole, folding litters. The experiments demonstrated that it takes approximately 28 minutes to remove from a P2V a completely immobile patient using this litter. An attempt to get such a litter out of the radioman's emergency escape hatch of the P2V was completely unsuccessful.

In the second phase of the experiments, a semi-rigid, poleless litter was used. With this litter it was found that an exit could be made in less than two minutes and from every hatch of the P2V. The semi-rigid litter can also be lowered from any height by line. The numerous straps on the semi-rigid litter proved to be an advantage for handling in cramped quarters and the stiffness in the bottom worked as a skid for any necessary sliding. One disadvantage of the original poleless litter was the time lost strapping in the patient, but the station hospital reduced this delay by replacing the buckles with parachute harness fittings and by practice.

As a result of the experiments each crash ambulance now responds to call with both types of litter available. Other air stations may find that the foregoing is applicable to their particular situation involving P2Vs and other aircraft.

W. L. PACK, CO

• This design is considered to be an excellent and practicable solution to this problem and is similar to standard semi-rigid litters already being used at many Navy and Marine Corps air stations. It is felt that this litter could possibly be further improved by using a Parachute Harness Quick-Fit "V," F S N R1670 - 360 - 0340 - L800 and Spring Type Parachute Snap AN 6516 FSN KZ5340-094-8004 combination vice the pictured Parachute Harness Quick-Fit Adapter on the patient-securing straps. This would considerably cut down the time required to secure the patient by eliminating threading the straps through each of the five adapters.

Rigid pole litter on right, NAS Brunswick's semi-rigid poleless litter on left.

In The Dark

FPO New York—This letter is not written as an insubordinate gripe for the writer will continue to follow orders and respect his seniors; however, a dangerous practice is in existence. Perhaps this letter may save a midair collision.

On a recent night, during the final 24 hours of a 48-hour ASW problem, all aircraft (fixed wing and helos) were ordered to fly without anti-collision lights to prevent the sub from early detection of approaching aircraft. There was no visual horizon or moon.

With helicopter running lights on bright, a vivid glow surrounds the cockpit. Helos were forced to fly with running lights dim steady because of this glow. An oncoming aircraft was only visible at ½ mile. Three near-misses occurred on this one night. On one of them a helo was forced to a rapid descent from 300 feet to 40 feet in order to avoid an S2F which turned away to narrowly miss another helo. This was only one of three such near-misses.

This aircraft lighting system was forced on the HS squadron over the objection of the CO who tried to find justification in writing for leaving the anti-collision light on but failed. The S2Fs fly with all lights off when searching in their sector. It is not too unusual for an S2F to make a radar run on a helo.

Arguments in favor and rebuttals of lights out:

Positive radar control—cannot be depended on.

Sub is not forewarned of aircraft approach—aircraft are too busy avoiding one another to look for sub.

Altitude separation exists—fixed wing above 300 feet, helos below. S2Fs are often below 300 feet when investigating contact.

Helos have longitudinal separation—helos were often vectored towards each other on radar scope blind spots.

In war, lights would be out—we are not at war, this is a needless risk.

Night helicopter flying is dangerous enough without this added hazard. Please come to our aid.

A WORRIED HELO PILOT

• Peacetime training must be realistic, because peacetime is the only time we have to train for wartime. However, several here feel this caper can be made realistic without the practices listed. Do our readers have any ideas?—Ed.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, U. S, Naval Aviation Safety Center, NAS Norfolk, Va. Views expressed are those of the writers and do not imply endorsement by the U. S. Naval Aviation Safety Center.

Pressure Suit Training Here

NAS Norfolk—In answer to comments made in Art Schoeni's letter

(May APPROACH) I would like to bring to the attention of the readers that there has been a Full Pressure Suit Water Survival Indoctrination Course for squadrons flying in this area. This indoctrination program was instituted this past fall in the Water Survival Program of the Aviation Physiology Training Unit, Medical Department here.

Fully realizing that inherent in naval duty and operations is the ever-present danger of survival in the water, LCDR N. K. Combs, MSC, started this program as an addition to the syllabus of the Full Pressure Suit Indoctrination Course.

Although only a limited number of people have been indoctrinated thus far it is our hope to provide each person flying the Full Pressure Suit a chance to experience what he can do in the water with it on plus his integrated harness and flotation gear.

Here are just a few of the areas covered in this program:

(1) Experience in breathing underwater in the suit.

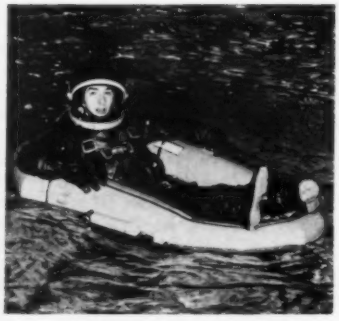
(2) Experience in releasing oneself from a seat by the use of the Emergency Harness Release Handle while completely submerged.

(3) Parachute drop and drag training, and

(4) Practice in entering the raft. These are just *some* of the areas we cover in this program.

With the cooperation of both the Regional Training Devices Office and NAS Norfolk's O&R Department we will soon have a new Dilbert Dunker cockpit. This will be a F8U-1 cockpit and it will have the capabilities of Full Pressure Suit Indoctrination. Installation of this device is scheduled for the very near future, specifically in the next three months, and as soon as tests have been run and escape procedures established we hope to include this in the program.

WILLIAM R. SMITH, ENS, MSC



Pilot undergoes full pressure suit water survival training in pool at NAS Norfolk.

Tied Tiger

LSD—I feel that administrative loads on naval aviators in a proficiency flying status prevents adequate perusal of aviation documents. My experiences indicate that when time is available, the documents are not, and vice versa. In particular I feel that at NAS there is insufficient provision for training and proficiency lecturing, plus a lack of rigid aircraft check-out requirements including insurance that check-out pilots are competent. Add this to a generally non-standard program for the entire proficiency field and sums up to a dangerous situation.

How's for running this as an advertisement in your rag to solicit comments from other nervous (but not yet spastic) deskbound tigers?

ANYMOUSE

• You are so right. There are several of these places where some accident is going to find a home soon!

Open The Valve

FPO San Francisco—Noted the letters in March APPROACH and that the hassle of the valve open, valve closed (Mk-2 life preserver) is still going strong.

Someone, no doubt, has investigated the oral inflation valve and its good and bad features in the Flight and Survival Phases, and we note, that the latest change positions it closed.

This detachment has been operating in accordance with BACSEB 55-61, which was changed by your note in the March issue. We had endorsed the "open" position based on the following survival situation(s).

1. Unable to get sufficient bouyancy due to:
   (a) punctured or torn compartment.
   (b) undercharged or useless bottle.
   (c) leaky valve seat.
   (d) water logged clothing.
2. Cold water and/or injured hands.

Our question is, how does one open the valve for use now that it is needed?

R. V. O'DELL, LTJG
VAH-4, Det. Foxtrot

• The following is quoted from BuWeps letter dated 15 May 1962:

"The correct positioning of the oral inflation valve lock of the Mk-2 life preserver vest is in the unlocked position to permit immediate inflation of the orally inflated compartment. It is generally desirable, however, to lock the oral inflation valve after inflation to prevent accidental or unintentional operation of the valve and release of air. BACSEB No. 35-58 is being revised to change paragraph 4. c. (3) to read as follows:

"Deflate oral compartments; use suction pump to completely collapse compartments; screw lock oral inflation valve, except for the oral inflation valve of the Mk-2 life preserver vest, which shall be in the unlocked position to permit immediate inflation of the oral compartment."

Computes Fuel Constantly

Pensacola— . . . a horrible mistake was made in the caption under the F8Us, page 2, May APPROACH.

Not at the end of the hop, but before, and during. Fuel should be computed constantly. In fact, the good leader does it so often that it is done without conscious effort. The best way to describe it would be to say that a good leader has a built-in gage in his little punkin head, and areas marked "caution," "more caution," "extreme caution," "danger," "in extremis." The location of the various areas of the gage change as the ability of the followers change. If Doug Petty were on my wing, I'd worry if the weather was bad, we were on top at 40M, and the fuel was good for only 20 minutes, not till then. If I had some characters, whom I'll not name, I'd worry prior to takeoff on a clear day.

CARL BROWN, CDR,
ASO, CNATRA

Hardhats for Multi-Engine Drivers

Atsugi, Japan—While looking over some old (ageless) APPROACH magazines, I found the answer to a recommendation in our last AAR. Pages 10 and 17 of December 1958 issue tells us that a hardhat is under development for multi-engine flight crews. This was again recommended in NAS Atsugi AAR 3-61. Has this project been dropped?

M. L. PHILLIPS, LCDR
ASO, NAS Atsugi

• This project has been dropped. The helmets under development were found to be inferior to the APH-5 in every respect. The APH-5 will be used for all aircraft.

Transferring?

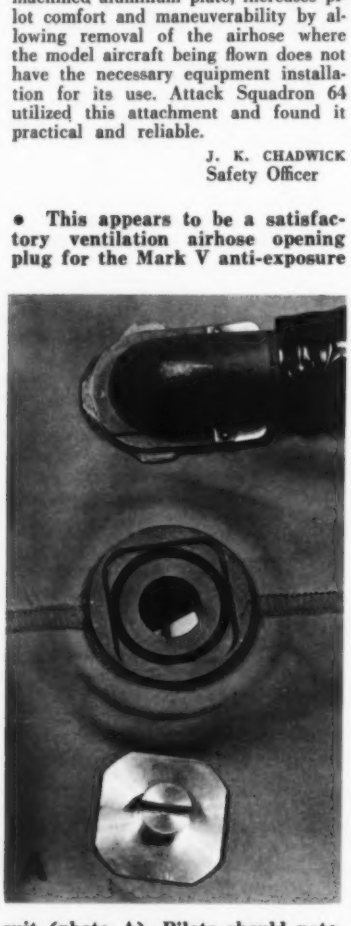
If you've transferred recently, or moved locally, and have a personal subscription to APPROACH, please send your change of address to Supt. of Documents, Government Printing Office, Washington 25, D.C.

Poopy Suit Airhose Plug

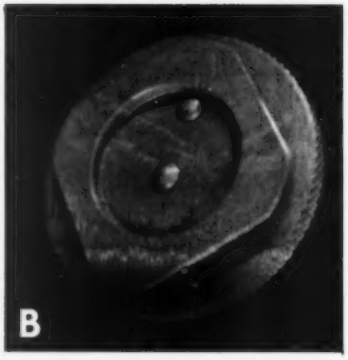
Tacron 64—Here's a photo showing a ventilation airhose opening plug for use with the Mark V anti-exposure suit. The prototype of this attachment was designed and machined during a shakedown cruise in Guantanamo Bay with CAG ONE aboard. The plug, a machined aluminum plate, increases pilot comfort and maneuverability by allowing removal of the airhose where the model aircraft being flown does not have the necessary equipment installation for its use. Attack Squadron 64 utilized this attachment and found it practical and reliable.

J. K. CHADWICK
Safety Officer

• This appears to be a satisfactory ventilation airhose opening plug for the Mark V anti-exposure suit (photo A). Pilots should note that the stud part of the plug should be inserted in the hole with the flush plate outboard to avoid protusion and interference.



If available, controlled stock item "Plug Assembly" RM8475-608-6782 which is designed for the full pressure suit vent hole, is also considered satisfactory for plugging the Mark V anti-exposure suit vent hole (photo B).



'Professionalism and Complacency' Don't Mix

It Can Happen to the Best of Them

NAS Norfolk—Just recently a series of events began to take place with a possible disaster as the end result. A group of "Professional" maintenance men were in the process of preflighting their aircraft for a scheduled flight. Everything was progressing at a normal rate, the refueler arrived in good time, the planes took on a full load as always, the oxygen system was serviced and the aircraft were ready for flight. Then a call was received from the refueler's office, "You have contaminated fuel in your aircraft." How did this happen?

Prior to being called to refuel the aircraft, the refueler driver had defueled a jet aircraft into a JP-4 truck and filtered properly for future use. Upon the arrival of the refueler at the aircraft that required JP-4, the proper connection was made and a full load of fuel was pumped into the plane. Normally there would be nothing wrong with the preceding operation. But here are two major items that were overlooked: a fuel sample was not taken prior to refueling, and the refueler driver did not know he had defueled a plane full of AvGas into a JP-4 truck. However, a fuel sample was taken during the filtering process. The taking of this sample was the only indication that something was amiss. The flight was cancelled and many extra man-hours were expended correcting this situation.

You may say, "So the plane had AvGas instead of JP-4, so what?" Simply this, do all jet planes operate on AvGas as well as JP-4? Would the operating temperature be the same? The answer to both of these questions is NO! It is entirely conceivable that the plane could have been airborne and the pilot would have noticed abnormally low readings on his engine temperature gage. Unless the pilot was aware of the fact that he was burning AvGas instead of JP-4, he probably would have left the aircraft. This incident could have been fatal if not disasterous.

Some of the phrases used to describe the situation were: lack of supervision, misinterpretation of current directives, and many others. I believe the word, "complacency" would cover almost every phase of this problem. In the preceding incident only "professional" maintenance personnel were involved. So you see it can happen to the best of them. Watch for signs of complacency. Don't stop learning. Don't stop trying.

CDR SMITH
NARTU

Underwater Escape

Corpus Christi, Texas—Shades of Grandpa Pettibone it appears that the ACEL people are not too well checked out in the Martin-Baker seat. Your article "Escape from Sinking Aircraft," May 1962 APPROACH depicts a pilot escaping under water. He has successfully cleared the cockpit structure, however, I hope he turns loose of that ejection curtain ring before he floats up another 12 inches, otherwise the seat is going to fire.

Now 19 Gs in the solar plexis may be okay for a professional prize fighter but is not recommended for old fighter pilots or for that matter young ones either. I assume this particular seat was dearmed during the test for the purpose of safety.

R. L. NALL, CDR, ASO, NAATC

• You are right! The picture does in fact depict the test subject grasping the ejection seat firing handle. Although the test subject is not available for questioning, it is difficult to believe that he is lifting the face curtain gently out of the way to "clear all obstacles" thus avoiding accidental entanglement of feet with the curtain handle. All personnel flying ejection seat equipped aircraft should be aware of the dangers of using the firing handle as a hand hold to aid in the egress from the waterfilled cockpit.

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Our product is safety, our process is education, and our profit is measured in the preservation of lives and equipment and increased mission readiness.

One More Test

Records show us that the majority of our accidents are the direct result of unsafe work practices.

To control this trend, we spend time and money for the education of our people. They are provided with safety films, safety posters and other training aids. In spite of this effort, these people measure the interest of top management in accident prevention by their own standards.

One of these standards is the promptness with which unsafe equipment or hazardous conditions are corrected. The attitude being that if management is not interested in providing a safe place to work, how interested can they be in safety?

There is still another standard, one with more deep-rooted impressions, that is used by these people. That one being, how does my supervisor react to the accident prevention program? Does he follow the safety rules when the pressure is on, or does he go through a lot of motion and lip service to satisfy the requirements of the boss?

Everybody has a test to give the supervisor, so why not just one more. Only this time, the supervisor can test himself. By answering the following questions:

- Have I ever tried to buy a few minutes with short-cuts, only to find that I paid for it with days of lost time?
- Have I ever hurried my men into taking chances?
- Have I ignored or tolerated infractions of safety rules because I was too busy, or because I clung to the hope that nothing would happen —this time?
- Have I ever failed to be sure that defective equipment was promptly repaired?
- Have I ever given my men the impression that I regard safety as a nuisance?

If you can honestly answer "no" to all of the above questions, you are indeed an asset to the safety program.—National Safety Council

POINT OF VIEW

When the other fellow acts that way, — "He's ugly"
When YOU do it, — "It's nerves."

When he's set in his ways, — "He's obstinate"
When YOU are, — "It's just firmness."

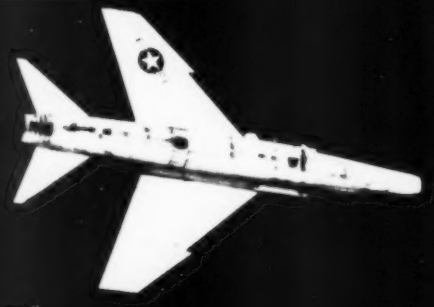
When he doesn't like your friends, — "He's prejudiced"
When YOU don't like his, — "You are simply showing good judgement of human nature."

When he tries to be accommodating, — "He's polishing the apple"
When YOU do it, — "You're using tact."

When he takes time to do things, — "He's dead slow"
When YOU take ages, — "You are deliberate."

When he picks flaws, — "He's cranky"
When YOU do, — "You're discriminating."

NARTU Norfolk Newsletter



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